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# CONTENTS.

---

	PAGE.
I. Report of the State of the Wounded on board his Majesty's Ship <i>Leander</i> , in the action before Algiers, extracted from a letter from D. Quarrier, M.D. Surgeon to the <i>Leander</i> , to the Commissioners for Transports. Communicated by Sir Gilbert Blane, Bart. . . . .	1
II. Cases of <i>Hernia Cerebri</i> , with Observations. By Edward Stanley, Esq. Assistant Surgeon to Saint Bartholomew's Hospital . . . . .	12
III. History of a Case of Rupture of the Brain and its Membranes, arising from the accumulation of Fluid, in <i>Hydrocephalus Internus</i> . By John Baron, M.D. Physician to the Infirmary at Gloucester . . . . .	51
IV. Observations on the morbid structure of Bones, and an attempt at an Arrangement of their Diseases. By John Howship, Esq. Member of the Royal College of Surgeons in London; and corresponding member of the <i>Société Médicale d'Emulation</i> , in Paris . . . . .	57
V. An Inquiry into the Origin and Nature of the Yellow Fever, as it has lately appeared in the West Indies, with Official Documents relating to this subject. By William Fergusson, M.D. Inspector of Hospitals, and Principal Medical Officer in the Leeward and Windward Islands . . . . .	108
VI. On the Internal and External Use of the Nitro-Muriatic Acid in the Cure of Diseases. By H. Scott, M.D. . . . .	173
VII. History of a Case of ill-conditioned Ulcer of the Tongue, successfully treated by Arsenic. Communicated in a letter from Charles Lane, Esq. to Henry Cline, Esq. President of the Society . . . . .	201

- VIII. History of a Case of Lithotomy, with a few remarks on the best mode of making the incision in the Lateral Operation. By Samuel Cooper, Esq. Surgeon to the Forces . . . . . 206
- IX. A Case of Fatal Hæmorrhage from the Extraction of a Tooth. By Richard Blagden, Esq. Surgeon Extraordinary to His Royal Highness the Duke of Kent . . . . . 224
- X. Rupture of the Stomach, and escape of its Contents into the Cavity of the Abdomen. By John Crampton, M.D. King's Professor of Materia Medica, and Assistant Physician to Stephen's Hospital, Dublin. Communicated by Dr. Baillie . . . . . 228  
Additional Observations, by Benjamin Travers, Esq. F.R.S. Surgeon to Saint Thomas's Hospital, and Vice President of the Society . . . . . 231
- XI. Account of a Case where a severe Nervous Affection came on after a Punctured Wound of the Finger, and in which Amputation was successfully performed. By James Wardrop, Esq. F.R.S. Ed. . . . . 246
- XII. An Account of some remarkable symptoms which were connected with a painful affection of the extremity of the left thumb, together with the mode of treatment. By John Pearson, F.R.S. F.L.S. M.R.I. Senior Surgeon to the Lock Hospital, &c. &c. . . . . 252
- XIII. Cases of Fungus Hæmatodes, with Observations, by George Langstaff, Esq. and an Appendix, containing two cases of Analogous Affections. By William Lawrence, Esq. F.R.S. Professor of Anatomy and Surgery to the Royal College of Surgeons, &c. &c. 272
- Explanation of the Plates . . . . . 315

REPORT  
OF THE  
STATE OF THE WOUNDED,  
ON BOARD HIS MAJESTY'S SHIP LEANDER,  
IN THE  
ACTION BEFORE ALGIERS,  
EXTRACTED FROM A LETTER FROM  
D. QUARRIER, M.D.  
SURGEON TO THE LEANDER, TO THE COMMISSIONERS FOR TRANSPORTS.  
COMMUNICATED BY  
SIR GILBERT BLANE, BART.

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*Read Nov. 12, 1816.*

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*His Majesty's Ship Leander,  
Motherbank, Sept. 28, 1816.*

GENTLEMEN,

HEREWITH I enclose a Report of the wounded on board this ship, by which you will perceive that the Leander has suffered most severely in this arduous conflict; many of the wounds were inflicted by large round, and double-headed or bar shot; others by grape, langrage, and musquetry, and some few by splinters; but we were in a great measure secured from the latter by our being almost in contact with the shore, and no accident whatever occurred on board, but by the direct fire of

## 2      REPORT OF THE STATE OF THE WOUNDED

the enemy. All our amputations were performed immediately, without waiting for re-action ; and it may be necessary to observe, that though many of the men were carried down with their limbs torn from them ; others with the most severe lacerations and fractures ; and one young officer in particular, with the spine of the ileum, and all the anterior abdominal muscles torn away, exposing the contents of the abdomen ; yet in no instance could we perceive the dreadful perturbation and constitutional shock so frequently described by authors on gun-shot wounds, until some time after the injury had been received ; and I have every reason to conceive, that amputation having so promptly followed the wound, was the only effectual means of saving many from its baneful influence, even under the very unfavourable circumstances in which we were placed. Indeed, gentlemen, no language can pourtray the horrors of the Leander's cock-pit for a period of thirteen hours. Sixty-five men were wounded and several killed by the first and second broadsides ; two poor boys were most dreadfully burnt by a red-hot shot blowing up the cartridge, which one of them was carefully guarding. The small space occupied for their accommodation was instantly crowded to excess : without air ; panting for breath ; bathed in a most profuse perspiration, and unable to stand upright, these men were to be attended to ; water ! water ! was the incessant cry ; most fortunately an abundance had been provided, and the women supplied it liberally. I have al-

ready said, gentlemen, that no language can describe the horrors of this scene, but you may figure to yourselves the condition of the miserable sufferers in the black hole at Calcutta, and you will have a correct picture of our condition. Under these disadvantages and difficulties our operations were performed, and the poor patients were afterwards exposed to the double danger of being trampled on by those who were rushing forward for relief. We could not place them on the lower deck as many had been wounded there, and the shot were coming in very rapidly. To illustrate what I have observed respecting the non-appearance of that peculiar derangement of the sensorium, which is said always to attend wounds inflicted by large cannon shot, I shall proceed to give you the following examples.

Captain Willson, of the Royal Marines, had both his limbs torn away by a double-headed shot; and David Barry, a seaman, had both his thighs torn off by a cannon ball. Amputation was immediately performed very high up. They lived some hours and were perfectly sensible, until within a few moments of their death.

Timothy Sullivan, seaman, had his left thigh most cruelly lacerated, the bone having been fractured up to its head, the nerves and blood-vessels torn asunder. The crural artery was readily secured at the groin. His right arm was fractured, and



#### 4 REPORT OF THE STATE OF THE WOUNDED

he had a wound in the breast. Still he continued sensible, and made the most earnest supplications that I should operate on him. I declined it until Francis Coulthred, who had his right thigh shattered and carried away by a cannon ball, made such an appeal for him, that he could be no longer resisted. No! said this brave seaman, when he was going to be lifted, I am comparatively easy now, let me entreat you to render some assistance to that poor fellow who is suffering so much, he was a prisoner with me eight years. Amputation was consequently performed at the hip-joint, after the manner of M. Larrey; the vessels were readily secured and he did not lose four ounces of blood; but as I had anticipated, he expired almost immediately afterwards. Coulthred, who evinced so much humanity, friendship, and patience, had his thigh amputated, and is now doing well. Six were amputated above the knee, some very high up, where we found the tourniquet useless; but there was no difficulty in restraining the hæmorrhage by the thumb, until the artery was secured. Three were amputated above the elbow, and two in the forearm. All bore the operation with great fortitude, and no unfavourable symptom occurred, even although one of them was much injured by a man who was mortally wounded kicking his stump while in the agonies of death. Some of the amputated arms are cured; but I shall send them to the hospital to secure them from their numerous visitors, who under the idea of kindness induce them to become irre-

gular, and ruin their health and constitution. One of the boys, so dreadfully scorched, died on the 1st instant, the other is convalescent, but he will be rendered incapable of further service. John Williams died on the 8th; he had been rejected at Portsmouth, where he entered, in consequence of his being consumptive, but having produced an excellent character, and being captain of a gun, the commanding officer requested me to endeavour to cure him; his natural ardour took him on deck in the moment of danger, and his thigh was amputated in consequence of a wound by a cannon ball. His fine spirits supported him, until nature being exhausted under such an accumulation of disease, he sunk to rise no more.

The wounds looked extremely well, and the men were in the highest spirits, until our arrival at Gibraltar, on the 10th instant; immediately after the battle an hospital was formed of the ward-room and after-part of the main deck, and before two o'clock of the succeeding day seventy of the wounded were snugly and comfortably slung in cots. There was a fine and most agreeable ventilation; the thermometer did not exceed 76°, and generally ranged from 70° to 74°; cleanliness was most particularly attended to, and spirits were used as a topical application. I have never seen wounds put on a more favourable appearance, or heal more rapidly. On the 13th, the pestilential easterly wind set in, by its sudden puffs obstructing the pores of

the skin and bringing disease and death in its train. That night John Taylor, whose stump had healed by the first intention, leaving only a trifling discharge from where the ligatures were withdrawn, was seized with bilious remittent fever; the symptoms were too unequivocal to be neglected, and early the next morning I represented to Captain Chetham, the urgent necessity for our departure from Gibraltar, as I feared not only that the fever would extend itself amongst the wounded and those in health, but that the wounds were beginning to assume a more unfavourable appearance. The captain immediately waited on the commander in chief, who permitted us to sail, notwithstanding our supplies had not arrived from Tangier. We could not get away until the afternoon, and that day three others were affected with symptoms similar to Taylor's. The propriety of sailing soon evinced itself by no others being ill, and the three men who were seized on the 14th having no return of the paroxysm. One of the seamen who slept on shore on the night of the 13th was seized with febrile symptoms; he was bled freely, and evacuants were used with the desired success. Taylor was bled, and every means were tried to check the progress of the disease, but in vain. He expired on the 20th. The liver was surcharged with blood, and a large abscess formed in its centre. The heart was soft and flaccid, and the pericardium contained considerably more fluid than usual. The intestines bore evident marks of bilious suffusion, and the skin and eyes were per-

fectly yellow. Previous to his decease the disease had assumed more of the remittent type. I myself had a slight attack on the 15th, 16th and 17th, but it was soon checked by evacuating remedies. On the 21st Mr. Ashington, midshipman, fell a victim to his desperate wounds, after bearing the most exquisite suffering with a fortitude, resignation, and patience, surpassing all belief. The left acetabulum and the head of the thigh-bone were shattered to pieces. The pubes was splintered to the symphysis, and the os ilium to its spine. The fatal grape-shot entered between the glutei muscles, and after hurling destruction along, such was its velocity that it escaped at the right groin. In viewing its desolating progress, after the death of this fine young man, we could not avoid admiring the wonderful dispensations of the Almighty, who alone could support him under such an accumulation of injury for the space of twenty-five days. The discharge had latterly become extremely copious and most offensive.

Thirty-six men are now on the list with very severe wounds, and I fear one or two of the fractured limbs will require amputation; indeed, I conceive it bad practice to attempt saving limbs in cases of fracture of the large cylindrical bones from grape or musquet shot, as it would not recompense for the suffering which the patient must undergo. The difficulty of keeping the separated ends in apposition on board of ship; the large

formations of matter ; the tedious and troublesome exfoliations, and the imminent risk of being forced to have recourse to amputation at last ; together with the probability of the poor fellows sinking under such an aggravation of disease, are considerations which should, I think, induce the naval surgeon to amputate immediately ; however, we cannot at all times emancipate ourselves from the slavery of custom, or the entreaties of the person most concerned. Seventy-six have already been restored to the service, and six are rendered incapable of further service. The wounds all look healthy and clean ; we have been daily occupied in extracting musquet balls, pieces of langrage, &c., from the various parts of the body ; and it is most singular to observe the variety of courses they have taken, and the narrow escape of parts of the most vital importance. By my having completed my supply of necessaries at Portsmouth, and having had a number of bandages of my own, we were enabled to replace them clean every morning, without having recourse to the hard canvas of filthy bunting. At Gibraltar we were most amply supplied by the army medical department. Dr. Frazer and his staff are entitled to the gratitude of the navy for the admirable arrangements made for the comfort and accommodation of the wounded, and the handsome way in which they tendered their services. But the desire of the men to return to England, and the advantage of restoring them to a more eligible climate, were so obvious, that we could not avail

ourselves of their excellent disposition. Two circumstances contributed greatly to the favourable result of the operations, the nourishment and comforts afforded to the wounded men by Admiral Milne, Captain Chetham, and the other officers of the ship, who gave up their own stock, and the zeal, tenderness, and perseverance of my two assistants, Mr. Sprowle and Mr. Llewellyn.

I ought also to state, that the alteration of temperature on our passage home, from 70° and 74° to 60° and 65°, had considerable effect in promoting the healing of the stumps.

In concluding, it may be useful to observe, that I have often seen the indiscriminate use of the tourniquet extremely prejudicial in gun-shot wounds. This instrument is seldom required in naval actions, excepting in operating, and I have long been in the habit of cautioning my assistants against its use, unless where it is obviously required. The fear of hæmorrhage is the greatest dread of the seaman; when once the bleeding is stopt every thing must be secure, and whenever they are allowed to have tourniquets in the boats, or in the tops, they apply them in all manner of wounds. The patient fancying himself perfectly safe under the protection of this gigantic fiend, creeps into a corner where he is not discovered, till the ligature has caused the most direful effects, and the otherwise simple wound is rendered highly dangerous.

## 10 REPORT OF THE STATE OF THE WOUNDED

Sometimes we are under the necessity of postponing the amputation in consequence of swelling and inflammation produced by this instrument where it was not required, and instances have been known in cases where it was necessary, that it has caused so much pain and uneasiness, that the agonized patient has unscrewed the instrument and bled to death. In the late battle, it is said one of the finest young officers I ever saw fell a victim to a reliance on the tourniquet, which he unloosed in the circumstances described above\*.

\* The question respecting the expediency of early operation in wounds, has been fully and ably discussed in a work published a few months ago, entitled, *Some further Observations on the subject of the proper period for amputating in gun-shot wounds*, accompanied by official reports of the surgeons employed in his Majesty's ships and vessels in the late battle before Algiers, by A. Copland Hutchison, late surgeon to the Royal Naval Hospital at Deal; surgeon extraordinary to his Royal Highness the duke of Clarence, &c.

**General Abstract of the wounded on board his  
Majesty's Ship LEANDER, before ALGIERS, in  
August, 1816.**

Number of wounded on board Leander in action at Al- giers, August, 1816.	Discharg- ed to duty, cured.	Cured, but objects for invaliding.	Died since the action.	Now re- maining on the sick list.	Total.
122	76	6	4	36	122
Deaths after amputation. — Names.	Quality.	Nature of operation.		Remarks.	
Capt. Willson.	Marines.	Both thighs amputated.		A very bad subject for an operation; died in four hours.	
David Barry.	Seaman.	Both thighs amputated at the trochanter.		Died in two hours.	
Tim. Sullivan.	Seaman.	Hip-joint amputated, arm fractured, and wounded on the breast.		Died in fifteen minutes.	
A seaman, name unknown, be- longing to an- other ship, thrust through the port during the action be- fore Algiers, on board his Ma- jesty's ship Le- ander.	Seaman.	Thigh amputated, arm fractured, and other- wise much bruised.		Died shortly after the operation.	

**N.B.** In all, seventeen amputations were performed upon fifteen pa-  
tients.



**CASES**  
OF  
**HERNIA CEREBRI,**  
WITH  
**OBSERVATIONS.**

By EDWARD STANLEY, Esq.

ASSISTANT SURGEON TO SAINT BARTHOLOMEW'S HOSPITAL.

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*Read Feb. 18, 1817.*

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**I**T is well known that under whatever circumstances a loss of bone may have occurred in the cranium, a tumor having its local commencement either in the dura mater, or in the brain, is liable to protrude through the aperture, and thence may continue to rise much beyond the surface of the surrounding bone.

The cases which are now offered to the Society, all relate to those tumors which having their commencement in the brain, we have been accustomed to name indiscriminately fungus cerebri, or hernia cerebri. They seem to me not without some claim to the attention of the profession; first, as furnishing additional elucidation of the pathology of the brain in general; secondly, as placing beyond all doubt, the fact, that a part of the brain

itself does occasionally constitute the substance of these tumors; and lastly, by exhibiting the results of the treatment, they will afford practical information to those who may hereafter meet with similar instances.

The terms *hernia cerebri* and *fungus cerebri*, I observed, have been applied without distinction to all protruded tumors having their local commencement in the brain, whether the mass consisted simply of coagulated blood, was an actual excrescence, formed of newly organized matter, or was a part of the brain itself. In the greater number of instances, however, in which the latter has been supposed to be the case, the opinion appears to have been founded on no better evidence than the resemblance which the tumor bore to the brain in appearance, and in presenting the phenomenon of pulsation. Direct proof, therefore, of the occasional identity cannot, I presume, be without use, if it only prevents confusion, by confining the term *hernia cerebri* in future, exclusively to those cases in which, as in the following, the substance of the tumor is ascertained to be really cerebral \*.

\* In the *Memoirs of Quesnay and Louis*, in the collection published by the French Academy of Surgery, it will be seen that the French surgeons of that period, fully aware that the brain might protrude through an aperture in the skull, carefully distinguished the cases of real *hernia cerebri*, or, as they denominated them, "*gonflemens, ou degorgemens du cerveau*" from all other cases of tumors, arising either from the *dura mater* or from the brain.

*CASE I.*

The first of the cases which I have to relate, occurred in a boy about 12 years of age, who was brought to Saint Bartholomew's Hospital on Tuesday, December 15th, 1812, with an extensive fracture and depression in the back part of the skull, near to the lambdoidal suture. The depressed bone was elevated after the application of the trephine. A considerable degree of inflammatory action in the brain succeeded, which rendered it necessary to bleed both locally and generally, to a large extent. By these measures, the unfavourable symptoms gradually disappeared, and the boy ceased to complain. The wound was healthy and granulating, every thing in fact seemed to be going on well to the 10th day, when he was manifestly worse, and upon removing the dressings from the injured parts, a tumor was seen thrust up into the aperture of the bones. Having reached the level of the skull, it continued to rise slowly, so that on the third day from its appearance, it had acquired the size of a small orange. The external surface of the tumor was irregular and dark coloured from coagulated blood which had incrustated upon it, but in the centre, it was lighter, and here evidently consisted of medullary matter. A vapour was seen arising from its surface, and an exceedingly foetid odour constantly exhaled from it. It exhibited regular and strong pulsations, and when pressure

was made upon it the boy did not appear to suffer pain. With the daily increase of the tumor, the symptoms of general disorder became aggravated, more particularly as they affected the nervous system: thus there was remarkable anxiety of countenance, and he was continually muttering incoherent expressions. Although to a certain degree insensible, he would however reply when strongly excited. With these nervous symptoms, a great degree of febrile disorder was combined. The tumor evidently consisting of medullary matter in its centre, and hence inducing a belief that the whole mass was formed by protruded brain, it was suggested that the only plan of treatment by which a chance of recovery could be afforded, consisted in removing the protrusion close down to the level of the skull, approximating the edges of the scalp as closely as possible by adhesive plaster, and applying a gentle pressure to counteract the disposition to further protrusion. This plan was at once carried into effect. The whole tumor was sliced off with the scalpel. During the operation, the boy gave no manifestation of positive pain, although not unconscious of what we were doing. Considerable hæmorrhage took place from the surface of the brain exposed by the removal of the tumor, the blood being thrown with great force, and to a considerable distance, from numerous vessels, which were attempted to be secured, but ineffectually, by ligatures. After a short time, however, the bleeding ceased. On examination of the part which had

been cut off, its exterior was found to consist merely of a layer of coagulated blood, the rest of the mass was brain, possessing a natural appearance, the distinction between the cortical and medullary matter being readily seen, with the convolutions and pia mater dipping down between them. During the remainder of the day on which the operation had been performed, the boy was upon the whole more tranquil. For the next two days he remained much in the same state, but on the third, he became worse; was completely insensible; had strabismus and a remarkable quickness of pulse. On the following morning he died.

#### *Examination.*

On removing the dressings from the scalp, the brain was seen to have protruded in a slight degree through the opening in the skull. A cake of blood was found, of about the size and thickness of a dollar, between the bone and the dura mater, near to the seat of the injury. All that part of the dura mater adjacent to the ulcerated aperture through which the brain had protruded was black, sloughy, and much thickened. The exposed surface of the brain from which the portion had been cut off, exhibited a softened and broken down texture; a state of disorganization which extended deep into its substance. About an ounce of foetid and dark-coloured fluid was found between the dura mater and arachnoid membrane. Several small effusions

of blood were met with both between the membranes, and in the substance of the brain. The arachnoid membrane was thickened and opaque over each hemisphere. The vessels on the surface and in the substance of the brain were remarkably free from blood. The lateral ventricles were large and filled with transparent fluid, and there was some found between the membranes at the basis, so that altogether, the quantity of fluid when collected from these two sources was very considerable. The fracture had extended directly through the basis to the foramen magnum. The thoracic and abdominal viscera were all healthy.

It is only necessary here to remark that the unfavourable termination of this case is sufficiently accounted for by the generally diseased condition both of the membranes, and substance of the brain. Whether these effects commenced immediately after the accident, or were the consequence of the injury offered to the brain by the removal of the protruded portion, and by the subsequent compression, will perhaps be regarded as doubtful. We may however observe that no increase of irritation succeeded immediately to the removal of the protrusion, and that up to the period when the protrusion appeared, the case was going on in every respect favourably. It is therefore probable, that this was the time when the diseased changes in the brain and membranes had their commencement.

*CASE II.*

The second case occurred also in a boy aged about 11 years, who was brought to the hospital on Friday, September 3rd, 1813, having fallen from a two pair of stairs window. On examination of his head, a fracture was discovered in the upper and middle part of the frontal bone, a portion of which about two inches in length, and one in breadth, was completely insulated and broken into several fragments, which were driven inwards beneath the adjacent bone. In order to elevate the depressed bone, it was necessary to apply the trephine and to make use of Mr. Hey's saw. The fragments being raised, were wholly removed; and it is right to remark, that here, as in the former case, the dura mater was uninjured. The edges of the scalp were approximated as closely as possible by adhesive plaster, and a bandage was bound lightly over the wound. It may also be mentioned, that the jaw was broken near the symphysis, and both bones of the fore-arm were fractured near the wrist. Under this complication of injury, we had but little hopes of the boy's recovery. Without entering into any tedious account of the symptoms that successively appeared, it will be sufficient to state, that on the first and second day, there was little more than general restlessness, and on the third, pain in the head and delirium. Under these circumstances he was bled largely, and copious evacuations were pro-

cured from the bowels. From the use of these measures, on the fourth and fifth days, the unfavourable symptoms gradually retired, and on the sixth day every thing seemed to be going on well: the wound was healthy, and his general health rapidly recovering. On the seventh day there was no alteration in the symptoms, but on dressing the wound, there was seen projecting through the aperture in the skull, a soft substance about the size of a hazel nut, and in its appearance resembling coagulated blood. When pressure was made upon the protrusion no pain was produced, nor was the sensibility of the boy affected. The nature of the protruding tumor was doubtful. In its external appearance it resembled coagulated blood, but from the recollection of the former case, we were inclined to view it as a protrusion of the brain, with blood effused and coagulated upon its surface. By examining the base of the tumor, we could ascertain that it had passed through an opening in the dura mater, and we also noticed around its circumference the appearance of a membrane with its edges ragged and torn, which we were inclined to believe was the remains of the ulcerated pia mater and arachnoid membrane. I this day simply applied a dossil of lint upon the swelling, and made a moderately firm pressure upon it. On the next day no unfavourable symptom had arisen, and the general health of the boy was rapidly recovering. On dressing the wound it was seen that the pressure which had been made upon the protrusion



having prevented its increase in height, it had extended laterally, so that altogether it was about twice as large as on the previous day. With the impression that the tumor was formed by protruded brain, I pared off its upper part, and on examination of the portion removed, its exterior was found to be merely coagulated blood; but beneath this, it consisted decidedly both of cortical and medullary substance. The wound was dressed as before, care being taken to make firm pressure by plaster and bandage. During the next two days the same plan was continued; the boy's health still remained undisturbed, but the protrusion was evidently increasing. Since it now appeared that pressure alone was inadequate to restrain the protrusion, I this day removed the whole mass down to the level of the skull. The portion cut off consisted wholly of medullary substance. Just at the time when the scalpel was passing through the tumor, the boy complained of pain, which however immediately ceased. The cut surface of the brain bled freely from numerous vessels of large size. By graduated compresses and bandage, very firm pressure was again made upon the wound. During the next three days the boy did not complain, the pressure being still applied as firmly as possible. Although the tumor still rose in a trifling degree, it had by no means increased in the same ratio as before the removal of the former protrusion, and the use of firmer pressure. On dressing the wound the next day, we observed that the disposition to protrusion

had ceased, and that there was such an alteration in the portion protruded, which was wholly medullary substance, as indicated the commencement of processes which would terminate by entirely getting rid of it. Hitherto the appearance of the protruded mass was that of healthy brain covered by a thin layer of coagulated blood; but from this time its character daily changed, and the alterations which ensued, seemed to be the same with those which constitute the process of sloughing in any other part of the body. The protruded brain lost its natural colour; it acquired a light yellow appearance; was split into several portions, and there exhaled from it an exceedingly foetid odour. Its substance daily became softer, ultimately acquiring almost a semifluid state, and in this condition the whole mass gradually wasted away. As the dead and putrid brain was detached, fresh granulations rose up to fill the vacancy, just as we see them arising from any surface from which a dead part has been separated by natural processes. In the present instance we had no doubt that the granulations were produced from the exposed substance of the brain. At length the whole of the protruded brain disappeared down to the level of the skull, and its place was occupied by the new granulations. During these changes in the tumor, which occupied a period of several days, the boy's health was good. At each dressing of the wound, moderate pressure was still made. By this means, the granulations filling the space before occupied by the protruded

brain, became daily more flattened, and at length were brought down to the level of the skull, when their cicatrization commenced and proceeded with such rapidity, that in a few days the whole wound was perfectly healed, and the boy in every respect well.

Besides the greater interest which naturally belongs to this case on account of its favourable termination, it will be regarded with attention by the pathologist, as shewing to him the several phenomena attendant on the mortification and detachment of a part of the brain, and the process of reparation. We observe that as the dead and putrid brain was detached, granulations arose from the living brain beneath, which gradually coalesced with those from the surrounding parts, and finally, that new skin was formed and invested the whole.

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### *CASE III.*

On Saturday the 19th of May, 1816, a boy aged 13, was brought to the hospital, who had on the night preceding received a kick from a horse, on the right side of the forehead, and was at the time of his admission quite sensible. Upon examination, a considerable portion of the frontal bone was found broken into several fragments and driven inwards beneath the part of the cranium, from which

it was detached. It was necessary to apply the trephine for the elevation of the depressed bone, the portions of which, when removed, left an aperture of about three inches in length and two in breadth. The dura mater had received no injury. On Sunday and Monday he complained of pain in his head, whereupon he was bled in the arm, and leeches were applied to the scalp with complete relief. On Tuesday and Wednesday he was free from complaint; but on the latter day, when the wound was dressed, the dura mater was seen to be slightly thrust upwards through the aperture of the bone. On Thursday and Friday the dura mater continued to rise, so that it was now elevated above the level of the bone, and exceedingly tense. The membrane was generally dark coloured from turgescence of its vessels, and there were distinguishable two points where it was quite black, and evidently mortified. On the next day the membrane had given way at these two points, and small protrusions of the brain had escaped through the apertures thus formed. On the Sunday, which was the eighth day from the accident, the protrusion had so much increased that the whole mass equalled the size of a hen's egg. During the several days in which these processes were going on, there was nothing worthy of remark in the general condition of the boy. All the functions seemed to be in their natural state. We were particularly attentive to ascertain the condition of the intellectual powers, and accordingly put several questions to him, which

were answered correctly. At each dressing of the wound a slight pressure by means of sticking-plaster and bandage had been daily made upon the tumor. On the ninth and tenth day the protrusion increased in the same ratio as on the preceding. Since the slight pressure hitherto made had been quite inefficient in keeping the brain within the skull, and it was conceived that a greater degree of pressure would not now avail for the same purpose, but would rather squeeze and compress the protruding mass against the cranium beneath; and further, as there was now arising considerable nervous irritation, for these reasons it was thought advisable to remove the protruded brain down to the level of the skull, and to employ much firmer pressure than had hitherto been made. During this operation the boy manifested considerable pain. The part removed consisted entirely of cortical and medullary substance quite healthy in its appearance. Lint was applied upon the exposed brain, and the integuments were drawn over it as tightly as possible, by plaster and bandage. It may be remarked that the pressure which was thus made upon the brain, rather increased than diminished the boy's sensibility. On the next day it was seen that the compression had prevented any further protrusion, and the surface of the brain remained flattened as it was left on the day before. The nervous system was altogether more tranquil, but there was slight accession of fever with pain in the head, for which it was necessary again to bleed

largely. During the next seven days, the same plan was continued, very firm pressure being repeated at each day's dressing, and no further protrusion took place. Our attention now became directed to the series of changes which were going on in the exposed surface of the brain. Apparently by a combined process of sloughing and suppuration, the superficies of the medullary substance was gradually removed, and granulations arose from the part beneath. Granulations arising at the same time from the edges of the scalp and dura mater, they became gradually joined to those from the brain itself, till the whole wound presented one continuous and granulating surface. The only circumstances to be noticed at this period with respect to the general condition of the boy, were a constant disposition to sleep, and insensibility to surrounding objects. As these were evidently increasing, apprehensive that they might be caused by the pressure which had been constantly maintained upon the brain, we determined to apply the bandage somewhat more loosely, the effect of which was that on the next day the brain had again protruded even above the level of the skull. It was therefore evident that to restrain the protrusion, it was necessary to apply the pressure as strongly as before. From this time the symptoms of insensibility daily increased, and other symptoms of nervous disorder quickly manifested themselves. The boy became exceedingly restless; he lost the power of voluntary motion over his left arm, its

muscles being occasionally affected with convulsive twitches. Under these circumstances, the pressure was again left off, it being determined to leave the future progress of the case to nature so far as regarded the protruding brain. During the remaining nine days that the boy lived, the protrusion still continued to increase, and in as great a ratio as at any period of the case, so that on the day of his death, the mass much exceeded the size of a large hen's egg. During the last three days, we noticed a very considerable quantity of serous fluid constantly oozing from the centre of the protrusion, whence it trickled down the cheek in a continual stream. Almost to the day of his death, the organic functions continued to be moderately well executed; thus with a good appetite, his stomach and bowels appeared to perform their offices perfectly. The powers of his nervous system continued however gradually to decline, till at length he terminated his existence on the twenty-seventh day from the accident.

Upon examination after death, it was in the first place evident that the tumor had sunk considerably from the elevation it presented during life, and was considerably lessened in all its dimensions. The aperture of the cranium through which the tumor had passed, had its edges attenuated and absorbed on the inner surface by reason of the constant pressure and pulsation of the protruded brain. Underneath the bone, there was an aper-

ture corresponding to, and firmly united with, the base of the tumor. In respect to the tumor itself, its external surface was black and sloughy, for the granulations which had been observed upon it had wholly disappeared. A section made perpendicularly through the tumor, and through the part of the brain beneath, discovered the internal structure of both, and left no room to doubt that the tumor consisted of medullary matter identical and continuous with that which was subjacent to it, and which constituted the right hemisphere of the cerebrum. The brain which formed the protrusion was however in some parts softened, and had particles of blood intermixed with it. Upon the reflection of the dura mater from the left hemisphere of the cerebrum, a considerable quantity of pus was found spread over the arachnoid membrane, and deposited on each side of the falx. In the same situations in the right hemisphere, there were similar appearances but in a less degree. It should here be particularly mentioned, that there existed a considerable space between the upper surface of the right hemisphere, all around the situation of the protrusion and the internal surface of the dura mater, while in every other part, the brain and dura mater were in close contact, as is natural. The greater part of the substance of the brain was much changed from its healthy condition, and especially in the right hemisphere. All the medullary structure intervening between the base of the protruded part and the anterior corner of the



right lateral ventricle, had entirely lost its natural structure and had become soft and pulpy, so as to convey the idea of rottenness. Around this disorganized mass, and extending across the corpus callosum into the medullary substance forming the roof of the opposite lateral ventricle, the brain had undergone a change from its natural colour to a greyish blue, while it still retained its natural consistence. During the dissection of the brain, there flowed from the lateral ventricles and from between the membranes, in all about three ounces of serum. The fracture had extended from the frontal bone to the basis of the skull on the right side\*.

In all the three cases which have been here detailed, it was clearly seen to be a part of the brain unaltered in structure which was protruded through the opening of the skull. But it will be naturally asked, to what particular circumstances are we to attribute the disposition of the brain to protrude in some instances, and not alike in all, where there

\* The fact may be worth noticing, that notwithstanding the boy lived a month after the accident, yet there did not appear to be any thing like a process of union going on in the fractured basis of the skull. In the first volume of the *Memoirs of the French Academy of Surgery*, there is a case related by M. Duverney of a man who had a fractured basis, and who lived for three months afterwards, in which it is particularly mentioned that there was no attempt at the union of the broken bone, notwithstanding so long a period had elapsed since the accident.

is any loss of bone from the cranium? Although it may not be within my power to afford such information with respect to this point, as will be thought quite satisfactory, and such as will justify any positive conclusions, yet there are some circumstances bearing upon the subject that may not be thought unworthy of consideration.

It cannot be simply the want of confinement and resistance from the loss of bone that gives rise to the protrusion of the brain; since it ought then to occur as an invariable consequence of an aperture being made in the skull. There must be besides an increase in the volume of the contained parts, produced either by a general distension of the blood-vessels of the brain, or by the addition of some new matter, as of water or pus. It is an opinion which I have heard stated by many, that it is the increase of volume in the brain, consequent on that determination of blood to its vessels which is known to occur from the excitement of inflammation, that occasions a part of the organ to be forced through the opening of the skull. If this were the cause of the protrusion, it ought uniformly to appear at the period when inflammation exists in the highest degree; but in the cases here related, and the remark also applies to the other instances on record, the protrusion took place when the inflammatory action was on the decline, and when therefore it was more likely that the contents of the skull would be increased by effusion

of water, either into the ventricles, or between the membranes of the brain\*. Still however it is of consequence with reference to practice, that we do not lose sight of the influence which a distended state of the vessels of the brain may have in causing, and will certainly have in augmenting, the protrusion when it has once occurred. Something more may also be said respecting the causes upon which such distension of the vessels may depend; for besides the active determination of blood attendant on inflammatory excitement, it is also to be recollected to what an extent these vessels will suffer distension, as it were passively, in consequence of obstruction to the return of blood from the brain to the heart, under any circumstances of forced or violent performance of respiration. It is well ascertained, that besides the regular motions which the brain exhibits upon exposure of its surface, corresponding to the pulsations of the large arteries at its base, it will also suffer eleva-

\* In a case related by M. Quesnay which was under the care of Peyronie, where the protrusion was ascertained to be brain, it did not occur till several days after the accident, at the time when the wound was in a state of suppuration.—*Mem. de l'Acad. Roy. de Chir.*

In a case which will be found in the 1st volume of the Medical Commentaries, it is stated that the brain protruded on the fourth day.

In a case published in the 9th volume of the Edinburgh Medical and Surgical Journal by Mr. Pring, it is stated that the protrusion, which was decidedly brain, first appeared about a fortnight after the accident.

tion and depression, when respiration is performed with difficulty, and corresponding to each expiratory and inspiratory action. In the second of these cases related in this paper, we made the following observations with relation to this point. When the boy was lying quietly in bed, the motions of the protruded brain accorded regularly with the pulsations of the arteries in the other parts of his body. When he rose, the tumor instantly sunk to a certain degree, probably from the blood being then returned more freely from the head than when he was in the horizontal position. When he was desired to hold his breath, the nostrils being at the same time closed, no alteration in the tumor was produced. In the inspiration preceding the act of coughing, the brain sunk, but in the instant of the forcible expiration, it was again driven upwards with great force\*. In order to shew still more satisfactorily the great power, with which the distension of the vessels will operate in elevating the brain under a violent performance of respira-

\* Blumenbach mentions an instance which fell under his own observation of a young man eighteen years of age, who when five years old fractured the frontal bone. Since this time there had remained an immense hiatus covered merely by a soft cicatrix. The depth of this hiatus varied according to the state of respiration. During sleep, and when he retained his breath, it was very deep; but in a long continued expiration, it became much shallower, the cicatrix even rising into a swelling. At the bottom of the hiatus, there could be seen a pulsation synchronous with the pulsations of the arterial system.—*Institutiones Physiologicae*.

tion, I may here introduce the following case from the second volume of the Edinburgh Medical Essays. A young woman suffered a fracture of the cranium with depression, which required the application of the trephine. In three months, the wound had healed, and the girl was quite recovered. Seven months after, the hooping cough became epidemic at the place where the girl resided. She caught the affection, and during a violent fit of coughing, the cicatrix in the scalp was lacerated, the dura mater torn, and the brain pushed out at the wound. The surgeon being sent for, he found two ounces of brain lying upon the head. Paralysis of the limbs ensued, and in five days the girl died\*.

\* I am fully aware of the uncertain opinions which exist even at the present day concerning this subject of the motions of the brain. I have in this paper simply stated the phenomena that were seen by numerous other individuals as well as by myself. If I might add any thing in allusion to the experiments and observations of physiologists with reference to this subject, I should certainly say, that by the experiments of Schlichting, Lorry and Lamure, recorded in the Memoirs of the Academy of Sciences, and by Haller's experiments detailed in his Opera Minora, it is unquestionably proved, that the brain will under certain circumstances exhibit distinct motions of elevation and depression, corresponding to expiration and inspiration, besides those motions imparted to it by the pulsations of the arteries at its basis. The extent of these motions in the brain connected with respiration will depend on the state of the vascular system generally, and on the manner in which respiration is performed. When this function is executed naturally, the obstruction to the return of blood from the head to the heart, in the instant of expiration, is  
not

Such then being the power with which the whole mass of the brain will suffer distension under any circumstances of forcible respiration, as in crying, coughing or straining, (either of which is so likely to happen,) it must be immediately perceived how much the effects resulting from this distension of the vessels will be augmented, if there should by chance be at the same time the smallest quantity of fluid effused, either between the membranes, or into the ventricles of the brain. I have already alluded to the circumstance of the protrusion constantly appearing upon the decline of the inflammatory action, and consequently when it is probable that there would be serous effusion in one or both the situations just mentioned. I may here also refer to the dissection of the two fatal cases given in this paper. In the one, there was found a considerable quantity of fluid in the several parts of the brain; and in the other, about three ounces

not sufficient for the distension of the vessels of the brain to such a degree, as to cause a distinct elevation of the organ, when its surface is exposed by the removal of a part of the skull. On the other hand, all the experimentalists concur in stating, that with a hurried and irregular respiration there is a distinct elevation of the brain attendant on the expiratory act, the brain in inspiration relapsing into its former state. One kind of motion in the brain is an actual elevation of its whole mass by the pulsations of the arteries at its basis; the other motion connected with respiration, is caused by the distension of the veins of the brain operating upon the organ with so much power, that its surface is elevated and depressed when exposed by the removal of a portion of the cranium.

of serous fluid escaped during the examination\*. Under such circumstances, we may not be surprised at the occurrence of such phenomena as are here recorded to have ensued after the removal of a portion of bone from the cranium, that the dura mater, notwithstanding its firm and resisting structure, should be thrust into the aperture, until at length from distension the membrane mortifies at some points, and the brain protrudes through the openings left by the separation of the dead portions. The brain being now freed from the restraint of the dura mater, is forced out in greater quantity and more rapidly, so that in one instance the protruded mass in twenty-four hours equalled the size of a large hen's egg.

In making these observations on the causes that may contribute, or even alone be sufficient, to produce the cerebral protrusion, my object has been principally with reference to the practice of surgery; since it must be obvious, how important it is for a surgeon to comprehend the circumstances

\* In the account of this case it is mentioned, that during the last three days of the boy's life, a very considerable quantity of limpid fluid was constantly oozing out from the centre of the protruded mass of brain. There is little doubt but that this fluid came from the lateral ventricles, although from the softened, and as it were rotten state in which we found all that part of the brain intervening between the base of the tumor and the ventricle, we were not able to discover any distinct channel of communication between them.

that may occasion the brain to be forced out of the skull, from the knowledge of which he will be naturally led to the means of its prevention, and to the proper treatment, when it has already occurred.

When it is stated that, of four cases which have occurred at St. Bartholomew's hospital within seven years, where the patients have survived some time after a considerable loss of bone from the skull, in three, protrusions of the brain succeeded, it will be admitted to be an object of importance that the surgeon should have in view the probability of such occurrence, and should adopt every measure that might have the least influence in preventing it. It would certainly be adviseable in every case of fractured skull with loss of bone, that from its commencement, the place of the bone that has been removed should be supplied as efficiently as possible, either by tight bandage, or by some other means that would afford a resistance to the exposed brain, equivalent to that of the skull itself. At the same time, the greatest attention should be given to prevent the least increase in the volume of the brain, either from distension of its vessels, or from serous effusion, the natural consequence of inflammation\*.

\* A case is mentioned by M. Quesnay, where a patient, after being cured of an injury of the head attended by loss of bone, was subject to convulsions and loss of understanding. It was conceived that these ill effects might arise from the constriction



It is perhaps scarcely necessary to observe, that when the protrusion of the brain has taken place through the aperture of the dura mater, the employment of pressure with the view to effect its return into the skull is entirely out of the question. I feel confident that pressure is unequal to accomplish this. Understanding then that the necessary means of cure consist in getting rid of the brain already protruded, the surgeon has to consider, whether he will at once remove it, that he may then make such efficient pressure as will prevent further protrusion; or whether he will await the event of the natural processes, which, it is likely, will at some period be commenced for getting rid of the protruded brain, and restoration of the injured parts. I must certainly confess myself unable to determine which is the best plan of treatment, only one of the three cases here recorded having terminated favourably. Under such circumstances, it will be better not to advance beyond the simple details of facts, and from the evident utility of exhibiting together a number of facts, all having the same tendency, I shall here briefly refer to such of the histories on record, as may illustrate this part of the subject.

which the convolutions suffered from being pushed into the aperture of the skull; accordingly, to counteract this, a pad was applied upon the cicatrix, and the convulsions did not recur. The event therefore seemed to justify the supposition respecting their cause.  
—*Mem. de l'Acad. Roy. de Chir. Tom. 11. 12mo.*

An interesting case is told by Van Swieten\* of a boy fourteen years old, who was struck upon the frontal bone by a ball of wood. He immediately fell down and vomited. Two months after, on account of unfavourable symptoms, the skull was perforated, and pus rushed with great impetus through the aperture in the bone. The brain itself soon afterwards began to make its way out. It not being found possible to restrain the protrusion, the whole mass was cut off by means of a thread carried through its base. The protrusion was quickly reproduced, and was again removed by the same method. The same process was several times repeated, until the mass removed equalled the size of a large orange. The protrusion now ceased, and the boy recovered.

In the Memoirs of the French Academy of Surgery†, the following equally interesting case is related by M. Quesnay. A young man received a blow from a stone on the right parietal bone. The skull was fractured, and the brain wounded. On the next day, the patient had convulsions and paralysis on the opposite side of the body, with fever and delirium. The injured brain became black, swollen, and softened, and protruded through the aperture of the bone. The surgeon daily removed some of the projecting brain. On the 18th day, the patient falling by accident from his bed, all the pro-

\* Commentaria, Tom. 1. p. 440.

† Tom. 11. 12mo.

truded gangrenous brain was detached, and found in the dressings. The swelling of the brain still continuing, more of its black and gangrenous substance protruded through the aperture and was daily cut off. On the 35th day, the patient, in a state of drunkenness, seized with his hand the mass of protruded brain, and tore it away with violence. On the next day, M. Quesnay states, "*On trouva le cerveau en meilleur état, presque tout ce qui étoit corrompu étoit emporté, et on s'aperçut qu'on étoit proche du corps calleux.*" It is further stated, that the exposed surface of the brain now became red, instead of black, and the patient gradually recovered. The paralysis however still remained, and he was subject to epileptic motions, but his intellect was quite perfect.

In the Medical Commentaries there is a case, already referred to, in which it is stated that the protrusion of the brain, which began on the 4th day, gradually increased till the 14th, when it spontaneously dropped off in pretty large pieces, no other treatment having been adopted than that of dressing it with dry lin.

In the case published by Mr. Pring in the Edinburgh Journal, the removal of the protruded mass and the employment of pressure, effected the cure in a case which was regarded as an example of the real *hernia cerebri* or protrusion of the brain itself.

The next case which I shall mention, occurred lately under the care of Mr. Jos. Taylor, surgeon to the forces, who obligingly presented the statement of it to Mr. Lawrence, to be laid before the Society, or to be used in any way he might think proper.

### CASE.

“ A boy of ten years old received a kick of a horse on the left side of the head, which produced a wound extending from the top of the ear obliquely upwards and forwards : it happened on Monday morning, ten miles from town. He had vomited much, and blood was discharged from the nose and ears ; he had been blooded soon after the accident, and had been since much disposed to sleep. Such was the account from his friends.

On Wednesday morning I first saw him ; he was comatose ; his pulse was slow, full, and intermitting ; his bowels were bound ; respiration somewhat stertorous ; skin remarkably dry, cool, and rather scaly ; his features were pale and shrunk. The head being uncovered, I could perceive without the help of any instrument, a fracture running in the direction of the external wound, the bone bare and depressed fully the thickness of the skull itself. The operation of the trephine appeared to be the only alternative, and I commenced it by an incision from the centre of the original wound backwards as far as the depression extended, which

was more than an inch, thus forming two flaps, which being turned backwards, the extent and site of the injury became conspicuous.

“ An irregular triangular portion of the parietal bone was insulated and depressed throughout : this, by the operation of the trephine, was removed. The dura mater was covered with clotted blood considerably beyond the extent of the fracture ; beneath the insulated portion of bone it was not, but near the centre of this part some turgid vessels appeared, somewhat in a radiated form. After cleansing the wound, it was dressed with adhesive plaster ; the boy was ordered a purging injection, and put to bed. In the evening, his pulse was more regular ; except that change, however, the symptoms were not perceptibly relieved.

“ Next day he was restless and impatient, instantly falling into a comatose state, and as suddenly starting out of it ; his respiration and pulse were a little relieved, but still irregular ; skin remarkably dry and covered with furfuraceous scurf ; the natural functions seemed almost suppressed. He was ordered some purgative medicine, which produced a few stools ; he used the aq. ammon. acetat. without any sensible effect. His friends would not (from a superstitious obstinacy) allow him to be bled.

“ On the second day, there was no remarkable

change; and on the third from the operation, the dressings were removed. The discharge was in considerable quantity, but thin, and the wound had a loose and flabby appearance; the vessels on the dura mater seemed more distended; the wound was dressed as before.

“ On the fourth day, there appeared a slight paralysis of the right side of the face; the wound was daily dressed, his bowels regularly relieved by glyster, but he continued in that restless stupid state till the eighth day from the operation. He could not be roused by his attendants, but on any loud noise would screech wildly, and attempt to jump out of bed, falling again suddenly into stupor and muttering delirium. His tongue was now paralytic, and his speech, when induced to speak, indistinct; the secretions still continued almost suppressed, and the pulse had become frequent and weak. In his fits of restlessness he would often attempt to tear off the dressings, and the motions of his hands were constantly directed to the head. On the eighth day, whilst being dressed, he passed his urine involuntarily. In the evening of this day, his father came to tell me that his son was much better, having slept quietly for some hours; that he had not screeched nor been troublesome; had asked for bread, and ate it freely; had enquired about home, and where he was, and talked of circumstances which had occurred previous to

the accident, as of yesterday ; that he had had a copious motion of the bowels, and was perfectly quiet and easy. I immediately visited him ; found the lad perfectly sensible and sitting up ; his pulse was fuller, slower and more quiet ; his skin had not so much the dry scurfy feel before observed ; it was softer, and attended with a degree of general warmth over the whole body ; his features were more full, but the paralytic affection, though less perceptible, still remained.

“ The next morning, on removing the dressings, I observed the dura mater ruptured at the spot where the turgid vessels were remarked, and turned back by the protruding brain about the size of the end of a moderate hen’s egg ; it was of a natural colour, and appeared perfectly healthy. He was now quite sensible ; when spoke to, he answered distinctly and without hesitation ; the pulse was soft, full and regular ; respiration natural ; he had had some copious motions by the bowels, and complained of hunger ; a thick brown scurf appeared separating from the tongue and lips, attended by a profuse discharge of saliva.

“ The wound was as usual dressed with adhesive plaster, the strips being made to cross each other over the protruded portion of brain previously covered by the flaps of scalp. I observed however, that when the strips were applied so

tight as to compress the brain to a certain degree, the boy became restless and stupid until they were removed or had slipped.

“The wound now assumed a healthy and firm appearance; it healed rapidly, and in three weeks from the operation the boy was playing at marbles with his companions.”

It will now be obvious, from the observations and facts which have been here referred to, that in whatever manner a case of Hernia Cerebri may arrive at a favourable termination, there must inevitably be a loss of brain proportionate to the extent of the protrusion. It would formerly have been a matter of interest to ascertain the condition of the intellectual functions in such individuals; but now, when the records of medicine abound with instances of recovery after the loss of considerable portions of brain, it is unnecessary to make any further observations with reference to this point\*.

\* In the 2d volume of the Memoirs of the French Academy of Surgery, there are two cases where the patients lost each a mass of brain, equalling a hen's egg, and yet recovered with perfect intellect.

Haller quotes an abundance of cases, from his own observation and from authors, where individuals lost a considerable quantity of brain, or have had various diseased changes occurring in the organ, such as gangrene, suppuration, &c. and have recovered without impairment of the intellectual faculties. Haller remarks, “hæc adeo frequenter ita eveniunt, ut cerebri vulnera, et jacturas symptomata facere negent cl. viri.”—Elem. Phys.



The question naturally presents itself, whether, in the individuals who have recovered after the loss of a part of the brain, there is any regeneration of the cerebral substance; or, if there is not, what are the changes occurring in the contents of the skull, by which (as must necessarily be the case) the cavity still remains accurately filled? The only facts with which I am acquainted, illustrative of this point, are deduced from the experiments of Struemann, referred to by Soemmering\*, who gives an account of the different effects which were noticed after the loss of portions of brain in various animals, and then describes the appearances which were seen in the brain, when it was examined some time after their recovery. He states that there arises from the exposed surface of the brain, a new substance of a yellow colour, thinner and softer than genuine brain, from which it may be clearly distinguished, and at the same time there remains an accumulation of fluid in the ventricles. In this way, the vacancy which would otherwise be occasioned by the loss of brain, is partly supplied by the growth of new matter, and partly by the enlargement of the ventricles, from accumulation of fluid within their cavities.

The drawing which accompanies this paper, represents a preparation of the *hernia cerebri* from

\* *De Corp. Human. Fab. Tom. IV. p. 113 et seq. note.*

**Case III.** It exhibits a vertical section of the protrusion, and of that part of the brain from which it has arisen. The tumor preserves its original characters sufficiently to shew that it is formed by brain. In its centre, the vessels had given way, and particles of blood are here consequently intermixed with the cerebral substance. The portion of the skull surrounding the base of the tumor, and the membranes of the brain, were included in the section for the purpose of shewing how the protrusion has taken place through the openings formed by ulceration in the dura and pia mater, and through the aperture in the bone which was caused by the removal of the fractured portions.

The following interesting case, of which the details are communicated to the Society by the direction of Mr. Pearson, will shew that protrusions of the brain may occur under circumstances very different from those of the foregoing examples; and hence may perhaps assist in correcting our opinions respecting the conditions essential to their occurrence.

#### *CASE.*

William Whittle, aged 20 years, was admitted a patient of the Lock Hospital, November 12, 1812. He had at that time a node on the os brachii, a similar appearance on each tibia, and a tumor on the forehead, which apparently contained a fluid.

There was also an ulcer on each of the tonsils, and he complained of severe pain in his head and in his limbs.

The account which he gave of his complaints, before his admission into the hospital, was the following: that he had contracted a chancre on the penis two years ago, for the cure of which he had employed some mercury; that he had been very irregular in the use of this remedy; had exposed himself to the hazard of renewed infection, frequently while under this course of medicine, and had never guarded himself against the cold and humidity of the weather. He had suffered from suppurating buboes, which were now healed; he had been afflicted with pains in his limbs about eight months anterior to his application at the Lock Hospital, and the ulcers on his tonsils had existed about two months. He was directed to take a compound decoction of sarsaparilla, to use the hot bath, and to take opium every night. In the period of about a month, the ulcers in his throat were healed; his pains were much relieved, and the several nodes on his extremities had subsided partially. Towards the end of December the nodes began to increase and become more painful; he was therefore ordered to commence a gentle course of mercurial frictions. He rubbed in a dram of the weaker mercurial ointment every night, with scarcely any intermissions from December 31, to March 15; his mouth was affected mo-

derately, during the greater part of this period. The tumor of the forehead had been several times punctured, and a small quantity of fluid somewhat thicker than serum was discharged by each operation. No permanent advantage resulting from these repeated evacuations of the tumor, it was divided by a free incision on March 15th, and a large portion of the frontal bone was exposed in a carious state. The cavity was dressed with dry lint, and there was a copious discharge of fetid pus at every dressing. On May 4th, symptoms of compression of the brain came on suddenly. He was attacked with rigors which recurred at short intervals; stertorous breathing; his pupils were largely dilated, and he became comatose. He was bled copiously and took a purgative, and fomentations were applied constantly to his forehead. All these alarming symptoms subsided in about twelve hours. He experienced another attack of these complaints on the 12th of May, which were completely removed by a recurrence to the preceding mode of treatment. He had no return of these threatening symptoms, and on the 15th of July the carious bone having become tolerably loose, was removed easily by the forceps. The surface which was exposed by the removal of the bone, exhibited the appearance of a diseased, dark-coloured mass, projecting beyond the level of the opening in the bone. This tumor increased in bulk very gradually, and as the dark-coloured sloughs separated, the substance assumed more the

appearance of flesh somewhat vascular, accompanied with a regular and visible pulsation. At this period the health of the patient was tolerably good, his appetite unimpaired, he lived on the common hospital diet, and required very little medicine. A moderate degree of pressure was applied to the tumor by compress and bandage; no ill effects ensued from it, neither was any sensible benefit derived from it. One night he accidentally struck his head with some violence against the wall of the ward, by which a considerable portion of the tumor was broken, and rendered so loose, that it was thought proper to remove the pendulous portion of it with the scissors; no bleeding of any consequence followed, but the discharge of about a tablespoonful of a fluid resembling that which is found in the lateral ventricles of the brain, succeeded the excision of the injured mass. As the tumor continued to increase in bulk, a strong ligature was carried round its base, and tightened gradually every day; but no visible change was consequent on this application, for the tumor continued to grow without exhibiting any character of an interrupted circulation of the blood upon its surface, or ulceration of the parts compressed by the ligature. His appetite was good, sleep and powers of locomotion were nearly the same as before the accident. On October 25th, he again struck his forehead accidentally, by which a large portion of the tumor was broken and separated: it was in a corrupted state, and shewed very little of the appear-

ance of the usual structure of the brain ; on the following day his strength was visibly decreasing, and on October 27th, after eating his breakfast as usual, he became stupid and insensible ; his pupils were much dilated, but he had no rigors. He died in the course of the afternoon.

On measuring the dimensions of the tumor before the application of the ligature, its longer diameter was  $6\frac{1}{2}$  inches, the shorter diameter was  $5\frac{1}{2}$  inches, its elevation above the margin of the aperture in the os frontis was 2 inches.

On examining the diseased parts after death, the dura mater was found adhering to the edges of the aperture through which the tumor had protruded, and to a small portion of the fungus itself. The morbid mass was of a much firmer consistence about its circumference than at its centre. The tumor was evidently continuous with the anterior lobe of the right hemisphere of the brain. Both the lateral ventricles contained some ounces of a bloody fluid. An abscess was found in the anterior lobe of the right hemisphere, containing between two and three ounces of pus. This cavity extended from the anterior part of the corpus striatum, to the base of the tumor ; but it had no apparent communication with either of the ventricles. The other parts of the brain exhibited no morbid appearance. The opening into the frontal bone was nearly circular ; its diameter from the internal

spine, to the temporal angle, was 3 inches ; from the superciliary ridge to the upper margin of the bone, was  $2\frac{1}{2}$  inches, and the edges to which the dura mater adhered were smooth and even. On dividing the diseased mass, it exhibited no distinct organization, but was a pulpy substance, of a grey colour, connected by shreds of the pia mater.

**HISTORY OF A CASE**  
**OF**  
**RUPTURE OF THE BRAIN**  
**AND ITS**  
**MEMBRANES,**  
**ARISING FROM THE**  
**ACCUMULATION OF FLUID,**  
**IN A CASE OF**  
**HYDROCEPHALUS INTERNUS.**

**By JOHN BARON, M.D.**  
**PHYSICIAN TO THE INFIRMARY AT GLOUCESTER.**

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*Read March 18, 1817.*

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**SARAH BARGUM** was born on the 18th of September 1815. At the time of birth the head was observed to be remarkably large. She was brought to me at Gloucester, on the 11th of the following December. At that time the circumference of the head was twenty-eight inches. In the course of another week it increased about an inch. The bones were separated from each other to the greatest possible degree, and all the divisions of the foetal skull were very observable. The circumference did not further enlarge, but a swelling began



on the top of the head over the posterior fontanelle, which in the space of another week acquired the magnitude of a goose's egg. At this period of the disease, the mother, on going one morning to take up the child, was very much surprised to find that the swelling had become much smaller, and perfectly soft. She observed likewise a constant dribbling of water from the urinary passage, and that the bed was soaked with the discharge. It continued incessantly for three days and three nights. By this time the swelling had entirely disappeared, the head was considerably smaller, and the integuments, which before were very much distended, now fell in large wrinkles over the child's forehead, so as actually to cover the eyes.

An increased flow from the urinary organs continued for nearly two months. When it became smaller in quantity, the head began again rapidly to enlarge, the swelling on the top re-appeared, and acquired a much greater bulk than before, it having on this occasion extended itself over the whole of the head and part of the face. On the 7th of March, the tumor had arrived at its greatest size. On that day a watery discharge tinged with blood was seen to ooze from the nostrils and mouth. It continued without ceasing till the 10th, when the swelling on the top of the head had vanished, and the head itself was much smaller.

The fluid never again accumulated in the sack on the outside, nor did the head ever gain its former magnitude, because the discharge from the nostrils was kept up with slight intermission till the time of its death on the 8th of this month. When by any accident the oozing from the nostrils ceased, the parents affirm that there was a corresponding increase in the urinary discharge. When the head was held forward, the fluid ran freely from the nostrils.

The child continued to eat well to the last. The evacuations from the bowels are reported to have been natural, but its powers of assimilation appear to have been destroyed, as she did not seem to have increased in bulk from the time I first saw it. She was sensible to external impressions, but the parents were not in that rank of life to make many observations, either on the nature or effect of such impressions. She never appears to have made the slightest attempt to articulate.

As she lived in the forest of Dean, I had it not in my power to examine her so frequently as I could have wished. But the foregoing facts were perfectly established, by what I saw myself, and by the testimony of a friend\* who lives in the neighbourhood, and had an opportunity of ascertaining their truth. The second filling of the head, after

\* J. Pyrke, Esq. of Little Dean.

it had been emptied by the great discharge from the urinary organs, seems to have been accomplished in little more than a fortnight. For though the first swelling disappeared in three days, the secretion from the kidneys appears to have been sufficiently active to prevent a second accumulation, till towards the end of February, when the swelling was again observed. As has been already noticed, it gained its greatest size on the 7th of March, and on the 10th it was no more visible.

On the 10th of this month I went to examine the child. Being obliged to perform the dissection in presence of the parents, it was less minute in some respects than I could have wished.

The circumference of the head was about 20 inches, being less by nine inches than it was before the swelling on the top first appeared.

I made a crural incision, and dissected back the integuments. On uncovering that part formerly occupied by the swelling, I saw immediately what accounted for its origin, and explained many of the phænomena. A little to the right side of the falx the dura mater was ruptured, as was demonstrated by a well defined circular opening nearly one inch in diameter, which communicated directly with what was the external tumor and the interior of the brain. Through this opening I evacuated between three and four pints of fluid,

which was contained in a bag formed by both hemispheres of the brain. The expansion of the brain was so great, that round the margin of the opening of the dura mater, it did not equal the thickness of a shilling ; and under the opening it had entirely disappeared, proving that it had given way when the dura mater yielded, and allowed the fluid from the internal cavity to escape into the outward swelling.

The cerebellum was entire, and the organs of the different nerves seemed unimpaired. I could not well examine the æthmoid bone, but I easily passed a probe through it into the nose.

The inferences deducible from this case are so obvious that I forbear to mention them. I am not aware that any of a similar kind has ever been recorded. For that reason it appears to me not unworthy of a place in the Memoirs of this Society.

The expansion of the brain, of its membranes and of the cranium, seems to have gone on till the parts would stretch no longer. Then the rupture took place, which caused the first swelling, and established a free and large communication between it and the interior of the brain. This fact is demonstrated by the rapid and remarkable absorption of the fluid in the tumor and in the head, so that the first entirely disappeared, and the latter became so much diminished in size, that the integuments hung in

large folds as already described. We have more convincing illustration of the same fact in the second appearance of the swelling. It was not circumscribed as at first, but extended over the head and face.

I have seen one case similar to that recorded by Mr. Earle in the last volume of the Transactions. The tumor was in the same situation, and had been twice punctured. The event of the disease has not yet been ascertained.

*Gloucester, Feb. 28, 1817.*

*OBSERVATIONS*  
ON THE  
**MORBID STRUCTURE**  
OF  
**BONES,**  
AND  
ATTEMPT AT AN ARRANGEMENT  
OF THEIR  
DISEASES.

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D'ÉMULATION, IN PARIS.

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*Read Dec. 10, 1816.*

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**T**HE object of my former inquiry\* was to ascertain the particular instruments, by means of which the animal economy is enabled to produce the successive changes that take place in the texture and appearance of bones, during the period of growth; and also to determine precisely their minute structure in that stage of life, when, from having ceased to grow, they may be considered as being completely formed.

In my former experiments I endeavoured to de-

\* See Med. Chir. Trans. Vol. VI. and VII.

monstrate several new facts, relating to the organization and economy of healthy bone; which facts will, I trust, throw some additional light upon this very beautiful, although exceedingly intricate department of anatomy. I now propose to continue the investigation, by the examination of the appearances and structure of bone under the influence of disease.

It is, however, with extreme diffidence that I undertake this task, feeling as I do my inadequacy to so extended a research, and aware that however earnest may be my desire to promote the advancement of our knowledge in pathology, the exertions of a single individual can but rarely prove of any considerable value, unless they are happily assisted by many fortuitous circumstances.

With the exception of some few works, little information, as far as my reading extends, is to be met with in books upon the diseases of bones; for most of those professedly written upon this subject are almost exclusively confined to the consideration of fractures and dislocations, which, strictly speaking, are the consequences of accident, and not of disease.

The only individual who seems to me to have studied this branch of surgery profoundly, was the late Mr. Hunter, who, with his characteristic penetration and singularly happy genius, has arranged

the affections of bones according to their appearances.

From Mr. Hunter's writings, and particularly from his lectures, it is evident that he was much more intimately acquainted with the principles of diseased action in bones, than any author who has yet attended to the subject. But even this great man frankly acknowledges himself at a loss how to explain some of those changes that bone undergoes in disease; although, had he applied the powers of which he was master to a more particular inquiry into the early stages of evolution and growth, there can be little doubt but that he would have been enabled to unravel with facility, most of those points which even to him remained inexplicable.

The imperfect state of our knowledge as to the diseases of the bones, has arisen partly from the subject, necessarily obscure, having been treated with neglect. The study of minute anatomy was never prosecuted with so much ardour as it is in the present day; neither were the advances of physiological improvement at any former period so rapid, as at the present moment. Independent of which considerations, it is most true, that in no department of anatomy is the assistance of the microscope so important and even indispensable, as in the unfolding the minute organization of bone; and the want of confidence that some have thought



proper to express with regard to investigations of this nature, must by every thinking person be attributed to a deficient knowledge of the most obvious principles of optics, rather than to any imperfection in the instrument employed.

In the attention hitherto devoted to this subject, I have enjoyed very considerable advantages in having recourse to one of the most valuable and most extensive collections of diseased bones, of any in this country; and it affords me singular pleasure to acknowledge upon this occasion, the kindness and friendship of Mr. Heaviside, who, with a spirit of liberality that always distinguishes the true friends of scientific research, has not only allowed me constant access to the above collection, but has also given me permission to remove, for more particular examination, such parts of any of the preparations as might appear to be essential to the success of the inquiry.

But notwithstanding these and other facilities, the endless diversity that occurs in the appearance of the same disease under different circumstances of age and constitution, as well as the occasional impossibility of making out the precise progress of symptoms, must still be regarded as unavoidable difficulties, which can be surmounted only by time and activity\*.

\* I shall feel myself particularly obliged to any gentlemen, who may have it in their power to assist me, by the favour of  
any

The following observations are intended to be directed principally to the ascertaining the morbid anatomy, or structure, of the various diseases. This mode of procedure appears to be the most proper, because the most cautious, and least likely to lead astray; and also because I am not without hope that my labours may thus prove useful, by affording at some future time a series of new data, for others more competent than myself to reason upon.

I shall not, however, bring forward merely the appearances of disease, but endeavour, as far as either our previous knowledge of the subject, or the results of my preceding inquiries may enable me, to point out the mode in which each particular disease takes place, noticing also the successive gradations of those processes set up by the constitution with a view to the preservation of life, or the restoration of health.

With regard to the diseases of bone, it will be readily admitted that there must be some certain and fixed principles, by which the operations of these parts of the machine are regulated, under disease as well as in health, similar to what we observe in affections of soft parts; but these principles have hitherto remained almost entirely un-

any such history or specimen of disease in bone, as may chance to fall under their observation, in the course of this inquiry.

known, a circumstance which has apparently arisen from the want of information with regard to the healthy structure and minute anatomy of bone.

Some anatomists, particularly Havers, pointed out the existence of a membranous expansion within the medullary cavities of the large bones; and from having occasionally perceived minute arteries perforating the substance of the bone, they concluded that the compact texture of bone must be in some degree vascular; farther examinations and subsequent inquiries also led to the opinion, that in some cases the minute canals through the bones might perhaps be furnished with membranous processes, extending outwards from the medullary cavity, and inwards from the periosteum.

I am not, however, aware that any series of experiments, previous to those which I have had the honour to lay before this Society, had demonstrated the existence, vascularity, and functions of membranous sheaths within even the smallest tube and canal contained in bone. The various facts brought forward with relation to this subject, appear to me to place the healthy economy of bone in a new point of view.

The small space occupied by the blood-vessels of the canals, compared with that which is found to be allotted to the secretions and membranes of these cavities, distinctly prove that the circulation

must, under all circumstances, enjoy as much freedom here as elsewhere; and the intimate connection formed by these canals between all parts of the bones and the surrounding soft parts, affords the strongest ground for believing, that the minute vascular and membranous organization of the bones is as susceptible of impressions from irritation, or sympathy, as the muscular, glandular, or other soft structures of the fabric.

I have elsewhere demonstrated the ease with which the continually varied operation of pressure is established in the animal machine during the successive stages of growth\*; it is thence easy to transfer the idea to the same parts, when placed under the influence of disease, which will at once afford the true explanation of many appearances, that were not to be satisfactorily accounted for upon any other principle.

In the diseases of the soft parts of the human body, particularly in affections of membranous parts, either from irritation or inflammation, we are upon examination generally able to distinguish some one spot which may be regarded as the central point, round which, according to the distance, the lesser consequences of the impression graduate. If, for example, a central spot is ulcerated and sloughy, the first circle surrounding it shall

\* See Med. Chir. Trans. Vol. VI.

sorbing bone is certainly a very curious circumstance; but it is nevertheless a fact established by occasional observation; one instance of which, where the surface of the dura mater was seen to perform this office, I have already mentioned in another place\*; and as to the membranes within the canals taking on the form of granulations preparatory to their commencing the action of absorption, it is only what we see happen to the periosteum, wherever it is placed under circumstances fitting it for absorbing bone.

A very curious and interesting point of inquiry regards the actual existence of absorbent vessels within the minute structure of bone. It has been generally presumed, that wherever blood-vessels can be traced for laying down the various structures of the body, there must be absorbents also, to take them up again; but this is one of the many speculative points which has been taken for granted without being proved. We have not, it is true, been able either to disprove or to demonstrate their existence in these situations; but it appears reasonable to set some limits to our belief, and considering that the mean diameter of the longitudinal canals in bone has been shewn to be only equal to the  $\frac{1}{16}$ th part of an inch, and that the vessels within them are proved to be much smaller†; and

\* See Practical Observations in Surgery and Morbid Anatomy.

† See Med. Chir. Trans. Vol. VII. page 401.

reflecting at the same time upon the well-known axiom in all the operations of nature, that of preferring simplicity to complication, it becomes at least exceedingly probable, that the minute branches of the veins are in these minute canals appointed to perform the office, and conduct the function of absorption: and the opinion is supported by the experiments of some of the most celebrated physiologists; for Baron Haller, as well as Mr. Cruikshanks, have repeatedly proved the origin of absorbent vessels from the cavities of the veins, by having injected them from the veins; a circumstance which clearly implies that the capillary branches of veins do contain matters not intended to be conveyed at once into the general mass of circulating fluids.

Now, with regard to the mode in which the condition of bone is changed previous to being taken up by absorption, there has been much diversity of opinion. Mr. Hunter admitted he did not know how absorption was performed, but he believed that the absorbents of surrounding living parts were capable of elongating themselves and of absorbing dead bone, which we see sometimes partially, sometimes wholly, removed. Mr. Cruikshanks says, "it is possible, that previous to the absorption of a solid, the parts immediately to be absorbed may be broken down, mixed with, or even converted into fluids \*." One of our most deservedly eminent

\* See Cruikshanks on the Absorbents, page 111.

teachers in medicine \*, considers the affinity of aggregation as exhibiting the nearest approach to that species of cohesion, by which the particles of earth in bone are held together ; and the experiments of Mr. Charles Hatchett, as well as those examinations I have myself instituted, prove that the particles of earth in bone certainly possess an animal medium, a reticulated gelatinous matter ; and although it is only in the bones of young birds that I have hitherto been able distinctly to see the ultimate reticulated texture, the results of the operation by which I have been in the habit of removing the animal matter from the bones of various animals, demonstrate the equal distribution of that principle, as the constant basis of every ossific structure.

My own opinion is, that in every instance where bone is absorbed, the process is commenced by the agency of some power exerting itself in the blood circulated over the part, by which the state of the animal principle is changed, and the particles of earth let loose, so as to be ready for removal by absorption ; and although we yet know very little upon the subject, I think I shall be able to demonstrate that the interstitial absorption of bone takes place by the different modifications of action of the same vessels, and the same membranous sheaths. There is the slow absorption incident to growth and

\* Dr. Hooper.

health ; and that which occurs in connection with healthy inflammation of bone ; besides the absorption that takes place during the existence of venereal complaints, and the use of mercury ; and many others.

It is presumable that the extremely minute circulation which has been demonstrated to exist in the interstitial parts of bone, may, like the other systems connected with the machine, be capable of varying and modifying the actions of its vessels in a manner peculiar to itself ; and that dependent on the variations of action in the blood-vessels, will be the particular affinities, at one time favoured, and at another retarded. It also seems to me extremely probable that the galvanic influence, which in some late experiments has been found to exert a power as curious as unexpected, in arranging and separating the elementary constituents of animal fluids, is evolved in the blood, by the action of the vessels upon their contents ; and that the particular arrangement of the vessels regulates the resistance and motion of the blood in such manner as may best insure the evolution of the precise measure of animal electricity that is required for the production and disposition of the new combinations.

Having premised the above general remarks, I shall now proceed to the consideration of the diseases of bone.



The intention of making a series of examinations necessarily supposes some plan, or arrangement of the subject; but the reducing the diseases of the bones into any kind of arrangement, is by no means an easy undertaking. Indeed, from the present imperfect state of our knowledge, the very attempt may to some appear an idle occupation of time; but as it seems to me indispensable that they be taken up in some sort of order, I have preferred that which I trust will appear least objectionable, placing them according to the more obvious characters of each affection, under the following heads, or divisions.

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ARRANGEMENT

OF THE

DISEASES OF BONES.

I.

*Alteration of external figure, not arising from general swelling, but most commonly from a deposit of newly formed ossific matter, upon the surface of the bone.*

Including all nodous formations, and those accumulations of ossific matter, constituting exostoses. These affections are in general the result of irritation or excitement of the circulation in the perios-

teum, in consequence of which the texture of the membrane itself undergoes certain progressive changes, while the capillary arteries deposit the ossific matter, the quantity and appearance of which will be regulated by the peculiar nature of the excitement in which it has originated ; occasionally, the appearances of exostosis are the consequence of the external part of the affected bone being separated, and raised above the general surface.

The appearances produced by the formation of new joints, and those resulting from the ossification taking place in the periosteum subsequent to necrosis, as well as the irregularities of surface consequent to the union of fractured bone, will be included under this division.

## II.

### *Enlargement, from swelling of the original substance of the bone.*

Under this head will rank the various appearances produced by spina ventosa ; an affection in which the natural secretions, for the most part, form the contents of the tumor.

The apparent readiness with which the bone gives way upon these occasions is partly explained by the circumstance of the excitement pervading the membranes lining the canals that are within the

solid substance of the bone, as well as the membranous expansions contained in the medullary cavity; in consequence of which the pressure by which the bone is expanded operates in the most diffused manner, for while the general mass of contents within is keeping up a degree of pressure outwards, the parietes of the bone are still further induced to unfold themselves, by the influence of the same principle being extended throughout the whole of the innumerable canals, that pervade the more solid parts of the ossific structure.

These affections appear to be produced by a peculiar modification of scrophulous action.

### III.

*Enlargement of bone, connected with an increased interstitial deposit of ossific matter, producing a more dense and compact texture than natural, as happens in healthy ossific inflammation.*

Comprehending all those affections connected with healthy, or phlegmonous inflammation of bone. As the establishment of this kind of inflammation requires a considerable degree of constitutional strength, it more commonly occurs subsequent to the completion of growth; whereas scrophulous enlargement most frequently takes place at an earlier period. The appearances produced are regulated by the degree of energy in the living powers,

combined with the peculiar nature of the local irritation.

The active agents in these cases are the membranous sheaths lining the longitudinal canals of the bone ; and I trust I shall be able to demonstrate that upon these occasions they exert a power of absorbing, as well as secreting, ossific matter. The particular preponderance, either of the one, or the other, of these actions, is productive of endless variety in the appearance of the parts when examined minutely. In one instance there shall be considerable enlargement of the canals, with little absorption, and still less interstitial deposit of ossific matter ; in a second, there shall be less disposition to enlargement of the canals, with a more considerable deposit of ossific matter ; while in a third, the inflammatory action shall be found to have been confined entirely to one side of the cylinder of the bone, producing thickening and consolidation, while the opposite side remains unaffected. In some cases of the latter description a most curious process may be observed to have taken place, for where the excitement has continued a long time without exceeding certain limits, the medullary cavity with its natural contents, has been slowly transferred away from the central part of the bone, to that side furthest removed from the seat of the inflammatory action.

## IV.

*Enlargement more or less perceptible, with a disposition to absorption and disorganization of bone, either operating from the internal or medullary cavity, when the parts of the bone are progressively separated and absorbed; or acting upon the external surface, when a succession of superficial exfoliations are thrown off.*

When from the establishment of this process the internal parts of bones are removed, the irritation would appear to spring from within the medullary cavity, operating outwards, as from a central point. This irritation and the consequent increased secretion, first affects the membranous linings of that circle of longitudinal canals situated next to the medullary cavity, in the solid sides of the bone. As the quantity of secreted medullary matter within the longitudinal canals increases, the degree of pressure increasing also, the space is soon enlarged; and as the resistance is least towards the medullary cavity, the thin mass of ossific matter interposed between the canal and the general cavity, is by degrees projected inwards; and as this process advances, the sphere of irritation extends itself to the next circle of canals, and the parietes of these also are made to give way, becoming thinner in proportion to their expansion; and as these successive courses continue to be thrown off, the laminae first displaced, being rendered extremely

thin, are eventually removed by absorption. Where this process has been carried on to a certain extent, the bones are reduced to the appearance of mere shells, and are rendered in some instances as thin as paper.

Where on the other hand, the external part of a bone has been subjected to this action, it generally arises from an abscess, or other tumor taking place in the soft parts covering it. The sphere of the irritation in this case extends itself, until, through the medium of the periosteum, the external part of the bone becomes affected. Under these circumstances an exfoliation is usually separated, and makes its appearance at the bottom of the abscess, and the exfoliating process will continue to go on, or not, according to circumstances.

These affections most commonly occur while scrophulous action is going on elsewhere, and there are strong reasons for believing them to be necessarily connected with a scrophulous state of constitution.

## V.

*Absorption, without enlargement; a consequence of peculiar excitement, more or less diffused through the general structure of the large bones, tending to weaken their sides, and render them liable to fracture from slight causes.*

Affections of this kind, although not unfre-

quently to be met with, have, I believe, hitherto been exceedingly misunderstood. The appearances to which they give rise, and occasionally the accidents that have resulted from them, have in some instances been attributed to caries, and in others to a preternatural fragility of the bones ; but caries implies death in the affected bone, and fragility can arise only from the bone having suffered some change in its constituent principles, while in the present case there is no appearance of the bone having either lost its vitality, or its healthy constitution.

This absorption of bone is the slow result of excitement upon the membranous sheaths of the longitudinal canals, and while these membranes deposit from their internal surface an increased quantity of medullary matter, they become absorbing surfaces externally, in consequence of which the canals are enlarged, and as this enlargement is progressive, the smooth surfaces of many of these canals are at last formed into one space, within which may still be perceived, very distinctly, the traces of those instruments by which the cavity has been produced.

From the above process taking place in conjunction with the formation of nodes, and other appearances of diseased bone, while the patient laboured under venereal symptoms, it has been considered as one of the consequences of the disease.

## VI.

*Change in the figure of adult bone, from absorption removing in succession the more internal parts of the structure, weakening the general fabric, and rendering it by degrees incapable of supporting the weight of the body, or the action of the muscles.*

This division includes the appearances produced by mollities ossium, an affection which varies in its effects in different cases, and in the same case in different parts of the body. In some instances, from the colour, appearance and smell of these bones, and particularly from their having occasionally shrunk very much in drying, it is presumable that the proportion of animal matter is too great; in most cases the preternatural curvature of the bones forms the only external character of disease; in all, however, the particular kind of absorption described (under division IV), appears to have been the principal agent in reducing the bone to a state of weakness, this process having in every instance I have yet examined, rendered the cylinder of the femur nearly as thin as paste-board.



## VII.

*Partial death, or necrosis of bone ; sometimes the result of inflammation and abscess within the bone, but most frequently the consequence of disease in the soft parts covering it.*

Necrosis is generally the result of disease in the soft parts, and where the necrosed portion is of considerable extent, especially where the affection takes place in a cylindrical bone, it gives rise to a curious action in the periosteum, referred to division I. A degree of excitement arises, producing a secretion of ossific matter which is deposited in the cellular tissue of the membrane, and as the quantity of ossific matter increases, the cellular texture in which it was laid is progressively removed by absorption, so that after some time there is the appearance of a strong and compact framework of new bone, more or less completely enveloping the old one.

This new fabric must necessarily be connected with the living extremities of the original bone, for as the ossific matter is secreted into the texture of the periosteum, it will follow the course and disposition of that membrane, so that provided the powers of the constitution are adequate, it will be eventually carried beyond the limits of the part to be separated, however extensive this may be.

## VIII.

*Change in the figure of growing bone ; dependent upon the more or less perfect removal of the phosphate of lime from the ossific texture, the organization of the bone in other respects being unaltered.*

The affection here alluded to, is that which is generally described under the name of rachitis, in which the bones become preternaturally soft, losing more or less of their opacity, and firmness, so that they may be in some cases bent in any direction.

## IX.

*Loss of firmness, with absorption and disorganization of bone ; induced by a depraved state of constitution, in some instances nearly allied to scurvy, and connected with decomposition of the gelatin of the ossific structure.*

Of this diseased state of bone few instances have been recorded ; those that are known appear to be exceedingly curious, and are almost inexplicable. In its progress however, it has occasionally been found to follow the same course with the mode of absorption described in division IV, and in such cases fragments of the external shells of the bones have been found here and there attached to the periosteum.

From the appearances upon dissection, as well as from symptoms during life, there is reason to believe this disease allied to scurvy.

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OBSERVATIONS  
ON THE  
DISEASES OF BONES.

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DIVISION I.

ON THE ALTERATIONS OF EXTERNAL FIGURE, CONSEQUENT EITHER TO PARTIAL SWELLING, OR TO A DEPOSIT OF NEWLY FORMED OSSIFIC MATTER, UPON THE SURFACE OF THE BONE.

In the consideration of the affections of bone included under this head, the appearances to be enumerated are exceedingly various, both as regards the causes, and the changes induced. Some result from a specific disease, dependent apparently upon the existence of the venereal poison in the system; others appear to be the purely local consequence of external violence, without indicating any tendency in the constitution to take up unhealthy action; although we occasionally see instances of a contrary description, where the slightest accidental cause, producing a disturbed circu-

lation in the periosteum, gives rise to some affection of that membrane connected with extensive secretion of ossific matter, and eventually fatal disease.

Under this head, I propose also to examine the appearances and structure of ossific matter, deposited, not as the consequence of disease, but as the natural means for repairing injuries of various kinds. This association may seem objectionable, as it connects the appearances of disease with the consequences of health and strength; but the various actions here alluded to must be allowed to possess certain features of resemblance to each other, which has determined me to include them all under the same general head.

*On partial swelling of the external surface of bone.*

Mr. Hunter says in his Lectures, "In some cases the bones themselves are swelled, and the parts evidently pushed out: how this should be is very difficult to conceive." Now the appearance here described, is exactly that which occurs in many cases that are considered exostoses. The principle upon which the change in the figure of the bone takes place, I have endeavoured already to explain; and as to the degree of alteration and extent of the affection, these will be as various as the varying circumstances which regulate the ex-

tension of the sphere of irritation in the vascular membranous expansions connected with the periosteum, and passing thence into the solid structure of the bone.

All practical writers have agreed that the structure of exostoses is exceedingly various, in some being comparatively soft, light, and cancellated; in others, as dense as the ordinary solid texture of bone; and in others again, exceedingly difficult to remove, being as hard and compact as ivory. But I am not aware that any of those authors who have yet treated on this subject, have pointed out with sufficient clearness the distinctions between the various modes of action, by which the different appearances are brought about. There are some which, notwithstanding the conspicuous results that attend them, are only very slight deviations indeed from the natural and healthy actions; there are others which mark a depraved turn in the whole constitution, although the local change may be much less obvious to a superficial observer.

The specimens which I have particularly examined of partial swellings, have been selected from the collection in Mr. Heaviside's Museum; and I have preferred those, where the swelling is situated upon some part of the body of the various bones, because most, if not all such appearances connected immediately with joints, may be rather

considered as the result of affection of the ligaments of the joints, and consequently not, strictly speaking, attributable to change of action either in the substance of the bone, or in the periosteum investing it.

These affections of bone seem to me the result of some external cause, applied either in the form of pressure or bruise. They appear to be the consequence of some state of periosteum of the part, and of the membranes of the canals within the bone, certainly different from that of exact health, and yet falling short of any material deviation; not at all disturbing the healthy functions of these membranes, in many cases, beyond the first or second series of the longitudinal canals; and even in these operating only to a small and defined extent, producing no appearances whatever, except merely such as are now known to arise from an increased activity in the healthy actions of the vascular system within the bone.

In some instances, however, the impression is found to extend itself through the whole substance of one side of the cylinder of a bone, producing a tumor outwards, the structure of which differs in no respect from that of healthy bone, although the general figure of the mass is changed.

In some cases the alteration can only be consi-

dered as the result of a gradually increased secretion of medullary matter into the longitudinal canals, while in others it is evidently the consequence of an increased secretion of ossific matter, which, however, is still deposited in the same manner as in health ; for the only circumstance in which the affected part of the bone is altered, is the enlargement, or rather elongation, of that portion of the cylinder.

The preparations to which I have been most attentive, are a series of exostoses formed upon the larger cylindrical bones, principally the femur ; from these will be selected such specimens as will most clearly illustrate the general structure of these tumors. Upon the anterior surface of the middle of the femur, I found in one instance a smooth equal tumor of an oval figure ; its elevation above the general surface was one fourth of an inch, and its greatest extent, which was parallel to the axis of the bone, was about an inch. With a view to its more particular examination, I removed a part of this tumor, with the assistance of Hey's saw ; making two transverse sections, one through the middle of the tumor, the other beyond its extremity, and two parallel longitudinal sections, meeting the first so as to separate the included part of the tumor, together with that portion of the cylinder upon which it was formed\*.

\* See Plate II. Fig. 1.

The specimen was then calcined and prepared in the manner pointed out in former communications\*, and was subsequently placed in the solar microscope. From the attentive examination of successive sections of this specimen †, it was manifest that the swelling had not been produced by any new deposit of ossific matter, as might have been supposed from its external appearance. The healthy action of the secreting membranes within the two more external series of longitudinal canals had by some means been disturbed, and the quantity of medullary matter deposited had been thereby increased; and this increase in the volume of contents had ultimately operated by raising up the external surface of the bone, without producing any other appearance of deviation from the natural structure of the parts, except in the enlargement of the canals.

Another preparation to which I have particularly attended, is that of a femur having upon its anterior part, about the middle of the cylinder, a considerable tumor. From the external figure of this tumor, there would appear to be little reason to doubt its being a deposit of ossific matter upon the external surface of the bone; for a considerable part of its circumference not only rises ab-

\* See Med. Chir. Trans. Vol. VI. and VII.

† See Plate II. Fig. 2.



ruptly above the general surface of the femur, but extends in some points beyond what appears to be the basis of the tumor; the greatest breadth of which is one inch, its length four inches, and its elevation near half an inch above the natural surface of the bone.

Sandifort, in his *Museum Anatomicum*, has given two views of an exostosis exactly resembling the specimen now under consideration, except that it was near two inches longer, and half an inch broader. But forming his opinion of its origin entirely from its external appearance, he seems to have been led into an error. He describes it as "*fracturæ squamosæ exemplum*;" and says, "*De latere exteriore ossis femoris sinistri secessit lamella, quatuor pollices longa, quæ ab anteriore et superiore non nisi pro parte cum osse rursus concretit, sed ab inferiore ad longitudinem duorum pollicum cum dimidio ab eo distat.*" Now it appears to me that in the healthy state of the bone, the shaft of the femur is of too compact a texture to admit of its being fractured by any external violence in the manner here supposed, for any force sufficient to splinter a part of the cylinder, could hardly fail to break it transversely also; which very evidently was not the case in any of the specimens exhibited by Sandifort, nor in any one of the numerous and interesting examples contained in the Museum of Mr. Heaviside. In order, how-

ever, to clear up this point satisfactorily, I carefully divided the abovementioned specimen, considering that in all probability its internal structure would demonstrate the manner of its production. In this expectation I was not disappointed. The tumor was found to have arisen from the superficial part of the bone having been raised up; and as in the former example, so in this also, it appeared that the disturbance in the healthy functions of the circulation within the bone, had been confined to the more external series of the longitudinal canals for a given extent, beneath which the natural structure of the cylinder remained undisturbed\*.

There is in Mr. Heaviside's Museum another very remarkable exostosis, situated upon the anterior part of the femur; and from the seat of the tumor as well as from the disposition of the masses of ossific matter of which it is made up, it appears as if the vastus externus muscle had suffered a partial conversion into bone. The extent of the tumor is equal to the extent of the insertion of that muscle; and the irregularities upon its surface correspond very much with the appearance of the packets or fasciculi of the muscular fibres. The greatest elevation of this tumor above the general surface of the bone, is one inch and a quarter.

\* See Plate II. Fig. 3.

To determine the mode in which this swelling had arisen, I divided the tumor longitudinally, and found that this also resembled precisely in its mode of production the specimens I had formerly examined; although in the present instance the affection had extended itself more deeply into the structure of the femur. About two thirds of the compact substance of that side of the cylinder upon which the tumor lay, was reduced to an equal, light, cancellated texture.

A very fine specimen of exostosis is exhibited by Sandifort in a tumor, the size and figure of which resembles very much the kidney of a sheep, supposing the flattened side to be laid against the inside of the femur, opposite to that part of the bone usually pressed by the saddle in riding. A section carried round the basis of the tumor, and exposing the medullary cavity of the femur, is shewn, and demonstrates that in this instance the affection had extended itself to the membranes lining the whole of the longitudinal canals contained within that side of the cylinder, and that consequently the affected portion of the bone had spread itself in every direction. It had increased in length and breadth, and as the contents of the general medullary cavity, together with the natural figure of the bone, tended to prevent its intrusion, the swelling had by slow degrees taken place outwardly. In this instance, therefore, the gene-

ral medullary cavity of the cylinder of the femur was continued into that within the tumor. The growth of this swelling was not confined to the formation of an increased extent of bone, for the average thickness of the parts of the tumor is near an inch; the compactness of its texture being apparently rather less than that of the original bone.

Sandifort has also given several more engravings of considerable tumors of this kind. In one, the swelling has arisen from the inside of the upper end of the humerus, just at that part where the bone would be pressed upon by the habitual use of crutches. In another, the tumor had sprung from the anterior surface of the tibia, two inches above the ankle. In both these examples the sections indicate an affection of all the solid substance of the bone, which is reduced to a state much resembling the cancellated texture within the extremities of the cylindrical bones.

In the exostosis upon the humerus, the section exhibits a disposition to form new bone, the appearance of which is that of a light cancellated structure, thrown across the general medullary cavity of the bone opposite the seat of the affection; and in the section of the specimen upon the tibia the same disposition has gone further, and the whole of the medullary cavity opposite the external swelling is filled with cancelli.

In some few instances the latter affection (that within the medullary space) appears to take the lead; a very beautiful illustration of which is preserved in Mr. Heavyside's Museum. The specimen alluded to exhibits a part of the cranium of a man who had been insane for many years. The left parietal bone is raised up into an unequal tumor externally, consequent to an increased secretion of ossific matter into the medullary space, or diploe, between the two tables of the skull. The distance between the separated tables of the cranium, at the thickest part of the tumor, is about an inch; the base covering an extent equal to about four inches. The natural figure of the cavity of the cranium remains unaltered.

*(In the ossific action of the vessels of the periosteum, producing nodes, or exostoses.*

The secretion of ossific matter by the vessels of the periosteum assumes so many different forms, and takes place under so many various circumstances, that it seems almost impossible to define those appearances that belong to specific action, so as to distinguish them in all cases from such as may arise from common or accidental causes.

On the present occasion I propose the examination of two kinds of structure. The one, the result of the ossific action having deposited a circum-

scribed scale, or lamina of bone, upon the natural surface ; this action being often connected with a degree of obvious thickening ; a tender, painful, and probably inflamed state of the periosteum ; and sometimes appearing to result from an affection of a specific nature. The other, arising in connection with great thickening of the periosteum, and most probably the consequence of a more or less perfectly diseased state of that membrane, which, continuing to increase in volume during the progress of the disorder, assumes new characters, determining the kind and quantity of the ossific secretion, conformably to the age and constitution of the patient.

The appearances of bone connected with the formation of nodes, I ascertained in the summer of 1814, at which period also I made most of the drawings that accompany the present paper. I cannot however avoid noticing, from its particular accuracy, a description of this appearance of bone as given in a valuable work just published. The author, speaking of superficial exostoses, says, " Dans la seconde forme que les exostoses affectent, un os sain et naturel sous tout autre rapport, presente une tumefaction circonscrite et plus ou moins volumineuse, dont la structure est différente de celle du tissu de l'os primitif, et qui parait surajouté. Les pieces anatomiques sur lesquelles on peut étudier cet dernier espece, tandis que l'affec-

tion est encore peu avancée, présentent en effet une lame osseuse plus ou moins épaisse, fixée sur la surface extérieure de l'os primitif, que la macération et une longue exposition au contact de l'air peuvent en détacher, et au-dessous de laquelle on retrouve l'organe sous-jacente exempt de toute altération\*." It is impossible that any description can be more accurate than this, with the exception of the last circumstance in the statement, which might readily be overlooked, because the exact state of the subjacent bone cannot be seen without the aid of a microscope, and even with the assistance of this instrument the change in its organization might not be detected, unless the eye was previously familiar with the natural appearance of the compact structure of bone.

The deposit of ossific matter which I have found on various parts of the tibiæ and other bones, in a man whom I had attended till his death, whose early history I was well acquainted with, and in whom the painful swelling and other symptoms produced by the nodes were at once relieved, and presently removed, upon the establishment of the mercurial excitement in the system, exactly resembled that which has been just described. The section of the affected part of the tibia, subsequent to calcination, exhibited very distinctly the

\* Précis Élémentaire des Maladies Chirurgicales. Par J. Delpech. Tom. III. p. 572.

even line of the natural surface of the bone, upon which was laid a thin deposit of ossific matter, about one fortieth part of an inch in thickness. The peculiar disposition of the spaces that existed between the recent deposit and the original bone, leads me to believe that the ossific matter was not deposited immediately upon the original surface, but that the secretion took place into the texture of the periosteum, but yet so near the surface of the bone, as to leave only the finest lamina of the membrane forming the separation. It is also pretty evident to me, that while some parts of this intermediate membranous texture were progressively removed, so as to allow the new and the old ossific matter to be brought into contact and close union, other parts had actually assumed to themselves a new function, in having furnished secretions, in sensible properties resembling, and in effect equivalent to, the medullary contents of the longitudinal canals\*. The surface of the newly deposited bone was exceedingly beautiful, and exhibited a great variety of foramina for the passage of vessels, and the transmission of secretions, of which it would have been absolutely impossible to have procured a perfect representation by any other means than by the solar microscope†.

The deposit of ossific matter upon the undisturbed surface of originally formed bone, may

\* See Plate II. Fig. 4.

† See Plate II. Fig. 5.



take place upon every occasion in which the healthy economy of the circulation through the periosteum is deranged, as is proved by an almost infinite variety of specimens preserved in Mr. Heaviside's Museum. In one very extensive series, the various shades of this process are exemplified as having taken place in consequence of the mere division of the periosteum in amputation; in another, as having been excited by the additional irritation of some part of the divided end of the bone having died and separated; and in a third, by very numerous instances in which, from various causes, a considerable part of a bone has perished, and has been subjected to the changes produced by necrosis. In the first of these three descriptions of case, the excitement appears to have been usually confined to a small extent of surface, and the thickness as well as extent of the deposit has been inconsiderable. In the second, the extent of the separating portion of bone, appears to have regulated the violence of the excitement and consequent deposit in the periosteum. In the third, the quantity and extent of the ossific deposit is in many instances considerable, the process of secretion in this case approaching very near to that in which the constitution forms new bone, with the specific view of preventing the ill consequences that would otherwise follow in extensive necrosis.

•

I shall now pass on to the consideration of those cases in which a diseased and thickened state of

the periosteum takes place, in connection with a very extensive secretion of ossific matter, giving rise to an affection which has by some writers been termed exostosis, and by others osteo-sarcoma.

One of the most striking circumstances to be noticed in this disease, at least as it appears to me one of the most curious of any, is, that in one case the tumor shall commence and go on increasing until it becomes necessary to amputate the limb, without any material complaint having been made of pain, or even inconvenience, beyond that which resulted from its weight and magnitude ; while in another, the patient is, from the first, distressed, harassed, and at last exhausted by continual pain and irritation in the seat of the disease ; although after death, the general structure of the tumor, as well as the actual seat of the disease, are found to be in both cases precisely the same. In the first case, the patient may be induced to propose the removal of the limb with a view to get rid of an unwieldy incumbrance ; but in the second, he is glad to submit to amputation in order, if possible, to preserve his life, by the performance of an operation which may relieve him from the consequences of the irritative fever, produced by the disease.

The seat of this disease being the same in all cases, the only mode that appears to me capable of explaining the wide diversity that is occasionally observed in its effects, is to admit that the

periosteum, in common with all membranous and other soft parts, may possess a variable measure of irritability, dependent on the prevailing turn, or particular state of the constitution; and that although in some instances a chronic increase of action may continue to go on for a long time without exciting any material local irritation or constitutional sympathy, yet in other cases, where the affection is seated in the same parts, the whole train of symptoms and consequences may be completely different; the morbid irritability hurrying on the progress of the disease, while the irritation of the diseased mass already formed appears to operate by increasing every hour the rapidity of its growth, until at length the unhappy sufferer sinks, completely exhausted. It must however be confessed, that supposing this reasoning to be perfectly just, we ought in opium to possess a specific; while we are obliged to admit, that in fact it is here useful as a palliative only\*.

The idea, that the measure of irritability in the system, regulates in a very principal manner the consequences of the disease, is at least supported

\* The early stages and present progress of this inquiry, closely connected as it is with the introduction of the laws of irritability, as not only influencing but regulating all the operations, both of health and disease in bone, frequently brings to my recollection how much I owe in gratitude to my early teachers, and particularly to Dr. A. Crichton, and Dr. R. Hooper, whose luminous and eloquent expositions of the laws of irritability, were always listened to with interest and pleasure.

by all that I have been able to learn in the attentive examination of many preparations of these tumors, as well as by what I have myself seen of the complaint, during its progress.

I have already stated, that I conceive disease in general to be propagated in bone, by the formation and extension of a sphere of irritation; and upon this principle I shall now endeavour to explain the progress of the disease at present under consideration, as well as the appearances met with upon dissection.

In several preparations of this disease, preserved in the Collection at Saint Bartholomew's Hospital, the appearances of the ossific structure are admirably displayed. In one instance a section including a large mass of the disease is preserved in spirits, and gives an adequate idea of the enormous bulk of the thigh, in a case in which I was informed the progress of the disease occupied several years, without being attended with any material severity of pain or irritation. In another preparation \*, the astonishing magnitude of the ossific mass is such as would almost exceed belief. The extent of it nearly conceals the whole length of the femur, and the circumference can scarcely be less than three feet. In this instance the correct relative position

\* Of this preparation Mr. Abernethy has kindly permitted me not only to make an outline, but also to bring it forward upon the present occasion. See Plate III. Fig. 2.

of the two extremities of the bone affords a strong argument that the femur remained entire very late in the progress of the disease, or more probably till the patient's death ; because otherwise the weight of the leg, added to the unavoidable slight motions of the limb, must have loosened the ends of the bone from each other, seeing that the texture of the disease by which the femur is surrounded is too weak to have afforded the least support. Upon this ground it may be inferred, that the disease in this instance was not connected with an excess of irritability ; although the same point is more distinctly proved by the patient's having lived till the tumor had attained its present magnitude.

In Mr. Heaviside's Museum there is a very beautiful specimen, similar to those just described. The tumor has formed round the inferior part of the thigh-bone. The mass of ossific matter is in volume equal to a large melon, but the cylindrical part of the bone, nevertheless, remains undivided, although the external parts have experienced some disturbance, as may be seen upon the preparation, where the superficial series of the longitudinal canals have by the usual consequences of irritation been laid open ; at some points the external surface of the femur is entirely removed, still more clearly demonstrating the principle upon which absorption takes place in these cases \*.

\* See Plate III. Fig. 1.

The last instance I shall mention, is one in which the ossific tumor formed upon the upper part of the tibia. This is one of those cases the history of which I have related in my Practical Observations in Surgery. It is also one, in which I had the best opportunity of studying the minute structure, as well in the processes of preparing the disease, as in the examination of it by the solar microscope.

The maceration of the disease, and the subsequent task of separating and clearing away the surrounding soft matter from the ossific structure, proved that this was a disease of the periosteum. The putrefactive process had rendered the whole mass light, loose, and easily separable; and the foul thick water poured off, and clear pure water substituted, most of the disease floated up to the surface, loosely involved in the remaining membranous parts. In the endeavour to raise it from the water it all fell asunder. The spongy head of the tibia remained nearly entire, as did the lower portion of the bone, but the two parts were disunited; as, however, the present confused state had been anticipated, I had previous to maceration made a rough outline of the preparation, which outline now proved useful, as it demonstrated not only the exact extent of bone removed by absorption at the point of separation, but also assisted materially in enabling me to recognise and replace the various parts of the disease.

In unfolding the structure of this tumor, the disjointed masses of ossific matter when drawn asunder, exhibited the remains of the membranous fibres drawn out so as to resemble very much the fine filaments of the silkworm's cone. These membranous filaments were exceedingly numerous, and in every part equally subtle and tender.

In those parts of the tumor situated anteriorly, where the vascularity was most considerable, the maceration had produced a perfect decomposition, so that the soft matter was readily washed away, and all the masses of the ossific structure were seen beautifully distinct and clear in the pure water. Towards the back part of the tumor, next the calf of the leg, the disease, as stated in my account of the dissection of the limb, had in some measure the appearance of fungus hæmatodes. In these parts the soft secretion, which much resembled sebaceous matter, was less susceptible of the putrefactive fermentation, and consequently remained unaltered in the interstitial spaces of the fine ossific fabric.

All the parts of the disease being laid out and allowed to dry, were ultimately built up, and replaced in their original relative position, as represented upon the engraving that is given with the history of the case.

The structure of the various ossific masses, when

observed with attention, appeared to be finely laminated, or fibrous, proceeding in a divergent course from the central part of the disease, which appearance was confirmed by the subsequent examinations with the solar microscope.

One small mass of an oval figure, the minute structure of which was particularly well cleared by the macerating process, was selected from the rest, and as it had formed an external part of the tumor, it was carefully divided with a very sharp knife, to exhibit a smooth section of its structure, including that of its external or growing surface.

The appearance of this specimen was then examined particularly, magnified to different degrees in the solar microscope, and a drawing of the whole piece made upon a moderate scale. The longest diameter of the specimen was four and a half eighths of an inch ; and upon this extent of surface I enumerated between forty and fifty lamina of ossific matter, as they appeared when the piece was magnified to the length of five and a half inches. On this scale, however, very few openings for the transmission of vessels were perceptible, nor was it apparent whether the surfaces of the foliated structure were smooth or not. Upon these accounts the screen of the instrument was moved until a part of the specimen, which, upon the first figure, measured half an inch, was in-



creased to four inches, when the texture was rendered much more evident. The openings of communication between the various spaces in the ossific fabric were perfectly distinct, and very numerous. It now appeared that the first deposition of the ossific matter took place in the form of small irregularly granular masses, and that by the subsequent operation of the soft parts of the disease, these were rendered laminar, or foliated.

Upon the engraving which is published of this disease, the progressive manner in which the body of the tibia has been absorbed may be perceived distinctly. Where the bone is immediately contiguous to the diseased mass, the deficiency of the whole of the compact part of the spine of the tibia is apparent, and to some distance beyond this point, the external series of the longitudinal canals may be observed to be enlarged and laid open, from the progressive extension of the sphere of irritation.

The minute structure just described, as belonging to the last-mentioned specimen of the disease, agrees in appearance with that of all the other preparations I have yet seen ; and as to the composition of the ossific matter, it appears to me from its sensible qualities to resemble, in general, healthy bone, or perhaps there is a trifling excess in the proportion of the gelatinous principle.

In one specimen, however\*, the colour is a light grey, instead of a yellowish white; and from the superior fragility of this, compared with other specimens of the disease, it is pretty manifest that the earthy matter predominates.

I have in one instance known the capillary arteries dispersed through the cellular membrane of a whole limb, assume to themselves the power of secreting ossific matter; it occurred in a very extensive disease of the lower extremity, the history of which has been related by Mr. Chevalier†.

The following is the note which I preserved of the dissection at the time. "On bringing home some pieces of the diseased adipose mass, Mr. Heaviside observed, that in precisely the same state of parts he had repeatedly found a deposition of ossific or calcareous matter. This induced me to examine it again with more attention, when to my surprise I found that numerous little bits of hard matter were plainly to be felt with the finger, and some of these brought away with the finger nail, and subsequently examined with a glass, had the appearance of a crystallized substance; although the largest of the pieces did not exceed in size a grain of mustard seed.

\* See Plate III. Fig. 1.      † See Med. Chir. Trans. Vol. II.

“In some parts these little earthy masses were more thinly dispersed than in others. Where they were thickly scattered, the feel of the disease, when the finger was pressed into it, was as if small particles of broken stones had been crushed in among the adipose matter.”

## EXPLANATION OF THE PLATES.

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### PLATE II.

*Fig. 1.* Shews the appearance of a longitudinal section of the femur, upon the external part of which a swelling had taken place.

- a.* The external margin of the section.
- b.* The internal margin of the section.

*Fig. 2.* Exhibits the appearance of a part of the above section, considerably magnified in the solar microscope.

- a.* One of the external series of the longitudinal canals passing into the seat of the affection.
- b.* The continuation of the same series of canals, much enlarged, and entirely altered in form, by the operation of continued pressure from accumulation of contents within the canals.
- c.* The external surface of the bone, or that covered by the periosteum.
- d.* The internal surface of the bone, or that towards the medullary cavity.

*Fig. 3.* A longitudinal section of the femur, exhibiting the structure of an exostosis.

- a.* The compact and healthy cylindrical part of the bone.
- b.* The appearance of the enlarged part upon the external surface.
- c.* The surface towards the medullary cavity of the bone.

*Fig. 4.* A longitudinal section of the tibia, magnified ; to shew the mode of attachment between a superficial deposit of ossific matter, and the natural surface of the bone.

- a.* The natural surface of the tibia.
- b.* The super-imposed lamina of ossific matter.

*Fig. 5.* The surface of the superficial deposit, magnified to the same degree as the last figure. Upon this figure the numerous foramina passing through the new structure are accurately seen, and the peculiar characters of the surface also are sufficiently apparent.

#### PLATE III.

*Fig. 1.* Shews on a reduced scale the appearance of a very fine specimen of foliated ossific tumor upon the femur.

- a.* The healthy part of the femur.
- b.* The condyles of the femur.
- c.* The ossific tumor.

- d.* The part of the bone, where, from the immediate vicinity of the irritation of the disease, the external surface has been not only disturbed, but entirely removed.
- e.* The part immediately beyond, where the diminished effect of irritation, instead of inducing absorption, has been the means of exciting a new ossific secretion upon the natural surface of the bone.

*Fig. 2.* Exhibits on a reduced scale the appearance of a tumor of the same description with the above. The minute structure of the disease is similar to that of the former preparation, but the general character of the disease was all that it appeared essential to represent.

- a.* The healthy part of the cylinder of the femur.
- b.* The condyles of the femur.
- c.* The ossific tumor.

AN INQUIRY  
INTO THE ORIGIN AND NATURE  
OF THE  
YELLOW FEVER,  
AS IT HAS LATELY APPEARED IN THE WEST INDIES,  
WITH  
OFFICIAL DOCUMENTS  
RELATING TO  
THIS SUBJECT.

By WILLIAM FERGUSSON, M.D.

INSPECTOR OF HOSPITALS, AND PRINCIPAL MEDICAL OFFICER IN THE  
LEEWARD AND WINDWARD ISLANDS.

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*Read March 18, 1817.*

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AS an introduction to the subject, which I propose to discuss in the present communication, I shall beg leave to premise the following queries, which were put by the Army Medical Board, in consequence of the great sickness and considerable mortality that prevailed on board some ships, conveying black recruits from Goree to the West Indies.

*Barbadoes, October, 1816.*

Queries relative to the Regalia Transport, which sailed with black recruits from the coast of Africa, for the West Indies, in 1815.

1. *Was the ship good and her crew healthy before the blacks were embarked?*

1. The ship was good and her crew healthy, until she took on board a large quantity of green wood, a very short time before the blacks were embarked.

2. *What was the state of the black recruits? Who inspected them previously to embarkation? and from whence did they come?*

2. Many were embarked sick from hospital, with ulcers, fluxes, &c. It is supposed they were inspected by the surgeon who had been appointed to accompany them, but did not, on account of sickness. No account can be obtained of the tribes or nations to which they belonged, previous to their capture at sea, or their being brought to Sierra Leone.



3. Do you conceive that any thing in the ship, or in the state of her cargo, could have produced a very destructive fever on her passage to the West Indies?

3. A quantity of green wood, recently laid in on the coast of Africa, and foul ballasting that had not been changed for years, I conceive perfectly adequate to the production of the most destructive fever, under various modifications of leakage in any ship navigating the tropical seas.

4. Inform me as far as you can yourself learn, of the treatment of the black recruits, before and after their embarkation, their diet, exercise, &c.

4. They had no surgeon to attend them in any of their own transports, and could not possibly be properly attended by the surgeon of the convoy ship, however ardently active might have been his disposition so to do, nor was it possible to furnish the transports with medicines and dressings as they might be wanted from that ship, supposing her to be furnished

with supplies for such a service, which she could not possibly be at Sierra Leone, where the want of medical stores was assigned as a reason for sending sick from the hospitals to the ships. Their diet was not suitable either in the provision laid in, or distribution afterwards, as was proved to the Military Board that sat at Barbadoes, to inquire into the causes of the sickness and mortality on the passage.

*5. The description of these recruits, whether young or old, and their previous habits and occupations, in as far as you can learn them?*

5. They were mostly very young. Their description that of uncivilized Africans. Some of them of a very barbarous description.

*6. Inform me of the number sick on arrival at Barbadoes, and describe particularly the disease under which they labour-*

6. 114 sick labouring principally under dysentery, ulcers, and dropsy, or cachectic leucophlegmasia. The treatment

*ed, with the different modes of treatment which were pursued ?*

of the first was conducted by mercurials, ipecacuanha, lime juice, and the mucilages; of the second by stimulating antiseptic dressings, combined with a generous antiscorbutic diet; and the third by deobstruents, tonics, stimulants, diuretics, &c.

*7. I request to know the total number sick on the passage, with the number of deaths, and the number sent sick on shore ?*

7. The convoy ship did not come into Barbadoes, therefore no communication could be held with the surgeon to ascertain the number of sick on the passage. The number of deaths was 52; the number sent sick on shore to hospitals 114.

*8. I request to know the strength of the detachment when embarked at Sierra Leone; the strength when landed at Barbadoes, and the number sick on arrival at Barbadoes ?*

8. The number embarked was 793; the number landed 741.

9. *I beg to be informed of the result in the number landed at Barbadoes, and the present state of the detachment?*

(Signed)

“ J. M'GRIGOR,  
Director-General.”

9. The number that perished in hospital in the course of 2 months, from 24th of August to 24th of October, was 70, viz. 53 of fluxes, 5 of dropsy, 9 of pulmonic complaints, 1 of ulcer, and 2 of fever.

The number treated 288. There was no case of elephantiasis or unmixed scurvy seen amongst the recruits landed at Barbadoes.

(Signed)

W. FERGUSSON,  
Inspector of Hospitals.

In replying to the foregoing queries I have confined myself entirely to the points which I was directed to answer ; but as the circumstances of health under which the crew and the inmates of the Regalia Transport arrived at Barbadoes, present an interesting field of investigation in regard to the infectious nature of tropical fever and dysentery, I have considered it my duty to throw every light in my power on this long disputed and yet undecided question.

From the documents that will be produced as an Appendix at the conclusion of this paper, it will be seen that the *Regalia Transport* arrived at Barbadoes in the month of August 1815, with the yellow fever on board from the coast of Guinea, its supposed original source: that the ship on her arrival at Barbadoes was not put under any restraint or quarantine \*, but communicated freely with the sea-ports of Barbadoes, the Saints, Antigua, and Guadaloupe; landing the severally ill or dying subjects of that disease amongst the inhabitants and at the hospitals at Barbadoes and Antigua, without communicating any infection at any of these places†; and finally, after having undergone a thorough purification, sailing from Guadaloupe for Europe, crowded to a very great degree with rebel French prisoners and their families from the jails under the most dangerous circumstances to health, with a case of yellow fever actually dying on board ‡ the day before she left Basseterre Roads ||, but without communicating any such fevers to the unfortunate passengers, leaving any behind her at Guadaloupe, or importing any at the ports she ultimately reached.

\* This happened through oversight of the Inspecting Medical Officer, while the army was absent at Guadaloupe.

† Vide Appendices Nos. 1, 2, and 3.      ‡ Vide Appendix No. 4.

|| I was absent from Basseterre at the time the *Regalia* arrived, and did not return till after she had sailed.—She was there only two days.

The first yellow fevers that were heard of there occurred at least five months afterwards, amongst some civilian strangers newly arrived from Old France, and these, while the British retained possession of the island, never extended to the seasoned inhabitants and troops in garrison, with the exception of some white officers of the black corps, that garrisoned Point au Pitre, who, on the very evacuation of that place, not so much as three months ago, were seized with yellow fever and died of it in Saint Vincent.

In like manner it will be seen from the queries prefixed, and the sick returns of that period, that a most putrid and malignant dysentery was introduced into, and filled our hospitals at Barbadoes, from the negroes that the *Regalia* imported; but that the disease did not in a single instance infect any medical attendant or servant employed about the sick.

As the question will next naturally arise, how such a fever as that which destroyed so many of the crew of the *Regalia*, and attacked almost every one that came on board of her to supply the place of those that had perished, could spread so unerringly and prove so destructive without being infectious, I shall enter into it more at length.

The quantity of green wood laid in at Sierra Leone on board the *Regalia* for fuel, must have

been very considerable; for after she had been several weeks in the West Indies, there were still as many tons of it left as in the master's opinion would serve for a voyage to Europe. The ballast too had never been changed or sifted from the time she left England, nor for any discoverable time before. It was what is called single ballast, small stones with a considerable mixture of mud and other impurities; and when I examined it on board the *Regalia*, it had been much fouled by leakage from the water casks. The ship in respect to leakage was far from being a dry ship\*, and from that circumstance might, with better ballast (of iron or large stones), have proved a very healthy one; but the absorption of sea water amongst foul ballast and green wood, could scarcely fail to prove unwholesome. In other respects the *Regalia*, in all her apartments of cabin, steerage, and betwixt decks, was uncommonly lofty and well aired, and so far from being crowded, she had about double the tonnage for the complement of negroes she brought over that is commonly allowed for troops. She was excellently found in every species of provisions and stores, and her discipline and cleanliness were unobjectionable. In short, there was nothing in her nor about her that could either generate or permit the retention, if introduced, of the matter of typhous fever. The cause

\* She had 32 inches of water in the well at the time I sounded it, and, according to the master's calculation, she made three quarters of an inch every hour.

of disease was therefore, I am clearly of opinion, to be ascribed to the green wood laid in at Sierra Leone, operating along with the foul ballast to furnish, when impregnated with the gases arising from putrid sea water, morbidic miasmata, similar to those that on land arise from marshes when exposed to the influence of the higher degrees of atmospheric heat. Why this morbidic power operated differently on the blacks and the whites, may be explained from the fact that the African is very rarely amenable to those influences that affect white men with intermittent, remittent or yellow fevers. If they operated at all therefore on them, they must have produced some other disease; but I see no reason to attribute the dysentery of the blacks from which so many perished \*, to other causes than those that have been proved to exist, viz: the sending numbers from the hospitals of Sierra Leone to the ships ill with that disease, the want of proper remedies and medical attendance during the voyage, and the highly improper and dangerous change of diet, from one wholly vegetable to the ordinary ship's rations, which on board the *Regalia* particularly, were served to those poor creatures during the voyage †. They were

\* One hundred and eleven fluxes were received into hospital, independently of those that died on the passage, 53 of whom (very nearly one half) perished.

† Vide Report to the commander of the forces, founded on the evidence produced before the Medical Board of Officers that sat at Barbadoes, a copy of which was sent to the Medical Board, dated 28th September, 1815.



received into our hospitals without any extraordinary precaution, fear, or scruple : for though the medical schools of Europe have raved for centuries about the contagion of dysentery, of which, as their professors seldom served in armies or lived amongst organized bodies of men, they could know very little ; every regimental surgeon who has served a campaign, or surgeon of a militia regiment who has been in an autumnal encampment on any of the downs of England, knows well that however practicable it may be, through an undue accumulation of sick, and neglect of cleanliness and ventilation, to propagate a typhoid contagion under the leading form and features of dysentery, ulcer, pneumonia, &c., dysentery itself, under all ordinary circumstances of accommodation, is no more an infectious disease than hæmorrhoids or catarrh.

In regard to the contagion of yellow fever, all those best qualified to judge, that is to say, those who have spent their lives and devoted their services in the countries between the tropics, where it is so often present, are of the same opinion. I do not pretend to say that amidst the heterogeneous mixture of which our profession is composed, I have not heard some profess and even subscribe to a different belief ; but I can declare that I never knew a single instance of any one, provided he had had experience of the disease, acting as if he believed in its being contagious, or taking any of the precautions which the instinct of fear or the smallest degree of common prudence would in that case

have dictated. He was contented with voting himself contagion proof, and never scrupled to inhale the breath, or repose within the atmosphere, of the dying patient. This question, hitherto so far from being decided, that it has lately been agitated in no common degree, by the writings of two men of rank and talents in the profession, deeply affects the peace, and involves the best interests of society. I know nothing of the field on which they have written, for I have never been at Gibraltar or Cadiz. The reports of the army and my own inspection reports \*, written before even I heard of any of the before-mentioned works, will prove that the barracks of Fort Royal are the most unwholesome in the West Indies, and that they have uniformly proved destructive to every white regiment that has ventured to inhabit them, however well seasoned they may have been to the climate. This was evident very lately in the case with the 15th regiment, which has now been eleven years in the West Indies, and is one of the best seasoned corps. At Barbadoes they were very healthy, having almost no complaint amongst them except an ophthalmia, which there was great reason to believe was spurious. In the month of June last, they were sent down to take the duty of Fort Royal, preparatory to giving up the island of Martinique to the French. Part of them occupied the barracks alluded to by Mr.

\* Vide Report on Martinico, dated 12th September, 1815, and Appendices Nos. 5 and 6.

Pym, but not the low Bomb-proofs, and were detained there ten weeks. At first they were as healthy as usual, but towards the end of that period, they became so affected with remittent fevers as to be nearly unfit for service\*; the proportion of fevers amongst that part of the corps being more than four to one, compared with the other wing of the regiment in Fort Bourbon on the hill. The sickly season had not then set fairly in, but had they continued at Fort Royal to the present time, there can scarcely be a doubt from their suffering so early and so severely, that before now they would, like other regiments in former times, have been nearly extirpated. The fort (Fort Edward, now Fort Louis) where the troops are quartered, has not only all the disadvantages of being situated on a leeward fenny shore, far down in a deep bay, but the additional ones of being at the mouth of the unwholesome carinage within pistol shot of its foulest banks, with several main trunks of profound uncleared ravines opening directly upon it from the country, and the extensive lamenteine swamps in a great degree to windward of it, which, though four miles off, communicate directly with Port Royal, by a deep marginal continuous line of swamp along the shore.

That even black troops suffered from the same cause, was evident from the case of the 8th West

\* Vide Appendix, No. 12.

India regiment, inhabiting the very Bomb-proofs from which the infection is reported to have spread in the year 1793, and who were attacked in the September of last year \*, with a fever (little liable as these people are to that species of disease) differing scarcely any thing from the worst yellow fever of the whites. I can prove from my own inspections, and that of the deputy inspector lately stationed there, that Case Pilote, so far from being the healthy village represented by Mr. Pym, is one where no new regiment could possibly remain healthy ; as it is low, to leeward, on the level of the sea, at the mouth of a ravine with marshy ground near it in the same ravine, and high mountains behind it, that obstruct every breeze, and reverberate the rays of the sun with a force that makes it one of the hottest places I ever saw. I am sure that the enlightened author of that work, with whatever eyes he may have viewed it twenty-three years ago, would not now venture to sleep there if he could help it, for a single night in the hot season ; at least I am sure that no other medical man experienced in these climates would : for, setting aside the peculiar unwholesomeness of Case Pilote, from its being in the mouth of a ravine, there is not one single spot at the level of the sea on the whole leeward shores, either of Martinique or Guadaloupe †, where a new regiment could be en-

\* Vide Monthly Sick Report for that period.

† Vide Inspection Report on Guadaloupe.

camped during the hot season, without being destroyed by tropical fevers; more particularly if, like the regiment in question, they had just come from active service in the field; a juncture, which is ever trying to the health of troops in the purest climates and the best quarters.

One thing is certain about Case Pilote, that if the 70th regiment carried the infection of yellow fever in Mr. Pym's time, they left none of it behind them amongst the inhabitants; as has been proved by the evidence of a respectable well informed inhabitant who was living there then, and resides there now.

I presume it will not be denied, that those who served during the war in Saint Domingo, where so many British troops perished, must have had some experience of yellow fever; I remained there till the last, and saw the work of destruction completed. At first, every new comer, whether medical or otherwise, had his fears; or I should rather say, had the firmest belief in contagion; but with none, did that prejudice ever remain beyond the year. It vanished infallibly as soon as he saw and had experience of the disease; and I can declare, that during the latter years of our sojourn there, with hundreds of cases daily before our eyes, mixed in every conceivable way with the surgical, the convalescent, and the healthy \*, I never even heard

\* This was often inevitable from the want of hospital accommodation.

the idea started, nor do I recollect a single precaution, advice, or observation that acknowledged the existence of contagion, ever being directed to the medical staff of the army from any quarter. I appeal to the writings of Dr. McLean, the living evidence of Mr. Weir, Doctor Jackson, Doctors Theodore, Gordon, Borland, Inspector Warren, and all the medical officers who served there, to bear me out in this assertion. I appeal to the evidence of every medical officer now serving in the West Indies, that has ever had experience of the disease, (for there may very probably be found contagionists among those who never saw it,) to say whether in their lives they ever met with a case of yellow fever that could with greater feasibility be traced to a personal communication with a subject labouring under the disease, than to the ordinary natural causes from which it has been proved to originate.

Another piece of doctrine has been promulgated from the writings of the authors above alluded to—that the yellow fever cannot be received by the same subject more than once. Of this we again

dation. In the 67th regiment of which I was surgeon, and which for nearly three years never sent a man away from the regiment to general hospital, I had only one large ward for the whole, without separation or partitions of any kind; and when severe ardent yellow fevers, as they often did, nearly filled the hospital, the punished, the ulcerated, the wounded, and the convalescent were obliged to retain or take a bed wherever a vacancy occurred.

who live amongst yellow fevers not only know nothing, but we see it contradicted by the daily experience of our lives. We are aware that as it is particularly a disease of the robust, the sanguineous and the rigid of fibre, he who has escaped from one serious attack is completely disqualified for a second in this climate, until he can find the means of restoring the inflammatory diathesis by a course of the unnaturally high gross living to which Englishmen are so prone; and we do not deny that the susceptibility towards a very acute disease may be greatly lessened by the exhaustion of that principle through the attack of such a one as yellow fever. But all experienced officers here have seen second attacks under those circumstances, and have witnessed two, three, and four in the same person, when cut short by timely remedies and not permitted to run their course; terminating ultimately in black vomit, hæmorrhages and death.

It is certain that if having had the West India yellow fever secures an exemption from the Gibraltar one, this last gives no security in kind. Captain Johnston, of the Queen's regiment now here, had the Gibraltar fever in 1804, and he has just now recovered with difficulty from a very alarming attack of the prevailing epidemic. It is not usual to meet with men who in the course of their lives have sustained two attacks of typhus gravior, and in as far as my experience goes, I am

satisfied that it would be more easy to find well authenticated instances amongst those who have visited the West Indies, of repeated attacks of yellow fever than of the other disease. In this small garrison, for instance, a man of the Queen's regiment died lately of aggravated yellow fever, after having since his arrival here suffered a well-marked attack of the same. Another of the 25th regiment also died in the same way a short time ago, who had been treated by Doctor Jackson for the epidemic fever that prevailed in Saint Kitt's in 1812, where his case was reckoned a remarkable one, on account of its severity, and various others of a similar kind have occurred in that corps.

The black vomit being ordinarily a mortal symptom, cannot of course be often seen twice in the same subject, and I am aware that the subtle disputant will here have a subterfuge, by denying that the first attacks could be yellow fever, the true Bulam fever. But again we have proofs even in the small island of Barbadoes, where the first patient that Dr. Caddell (a physician of the greatest experience) ever treated, had a distinct black vomit, (it made the strongest impression upon him,) he recovered miraculously, and died some years afterwards of the same disease, and with the same symptom.

A third writer of acknowledged talents has, no doubt unintentionally, done much during a series of



years to alarm the public mind on the subject of contagion. I feel that I have a right to use this language in regard to Dr. Chisholm's assertion, from the following circumstances. In page 119, Vol. II. of second edition of his work on the fevers of the West-Indies, he states that the General Elliot, East-Indiaman, imported the contagion of yellow fever into Fort Royal, Martinique, in June 1796. This was one of the ships appointed in that spring to take out the scattered remains and detachments of Admiral Christian's armament, that had been so severely handled by the elements the preceding winter. It so happened that I, being then on my way to join the 67th regiment in Saint Domingo, was ordered on board of her to take charge of the detachments of the Buffs, 38th and 60th, she was carrying out: I also acted as surgeon to the ship's crew, and can declare that when we landed at Martinique there was not a single sick human being, except the ship's carpenter, who was far gone in consumption; nor had there been the smallest illness amongst us from the day of our sailing at Portsmouth, except a very few of the slightest calentures (I had one) when we first entered the tropics, none of which endured more than twelve hours. She sailed from Portsmouth on the 15th of May, and arrived at Martinique, after touching at Barbadoes for orders on the 19th or 20th of June \*.

\* Vide Inspection Report on Grenada, April, 1816.

Having thus committed myself to oppugn the opinions and doctrines of men whose writings may have given them character and estimation in the world, far beyond any thing I can boast of, it seems to be right that I should state what I conceive to be the source of this endemic fever, which I deny to be ever imported and contagious.

The generality of the West-India towns, and consequently of the garrisons for the troops, are situated on the leeward shores of the country, at the bottom of the deepest bays that can be found, as a protection to their trade against the winds from the sea. The soil in such localities must always be alluvial, and is often marshy. Nine-tenths of the towns are inclosed by high hills rising immediately behind them, which exclude the breeze that in its natural course ought to reach them from the windward side of the country; and if we add to this that their elevation is generally little above the level of the sea, we shall have abundant reason for concluding, that if the highest degrees of reflected tropical heat, defective perfusion, and the miasmata that reside in marshy soils or may be formed in the drier alluvial ones by heavy rains, can produce aggravated remittent fever, it must happen under such circumstances, which, so far from being corrected by an enlightened police of towns, are often forced into unnatural activity by the utter disregard of those regulations of cleanliness and order, that

all well governed communities take pride in observing.

The settlements of the planter in like manner are formed, not on the elevated mountain ridge from which the periodical rains have washed away the soil, but in the alluvial grounds beneath, where his labours can with more certainty be turned to profit. Nor is it to be wondered at under such circumstances, that a body of raw troops or young civilians, come to settle in town or country, should be swept away by tropical fevers. The wonder in fact ought to be why it does not happen with more unerring certainty ; for there are seasons and even courses of seasons under apparently similar circumstances of heat and moisture, when even the declared swamp, which no one can mistake, is comparatively innoxious to the new comer from Europe, and still more so to the seasoned inhabitant of the country\* ; this begets in the young adventurer or hardened votary of wealth, a fatal delusion of confidence which, though so often exposed by the melancholy recurrence of fatal fevers, is never cured. They vote themselves secure, and despise precaution because they have escaped for a season. The constitution in fact is ever charged ; but is the power that applies the match which cannot accurately be defined or distinguished.

\* Vide Inspection Report of Tobago, dated March, 1816.

On the occult nature of marsh miasmata, and under what circumstances these become clothed with morbid powers, it would be as presumptuous as it would be idle in me to attempt definition, or to prescribe their laws. No one, I believe, can take it upon him to say with precision where they reside, and in what they consist; but from the reports I have already presented on the subject, I feel warranted in believing that their pestiferous quality does not necessarily depend either upon aqueous or vegetable putrefaction, however frequently it may be found combined with both; and that it never proceeds from open masses of water under any circumstances, but that it is destroyed and corrected whenever water can be brought in that state. By this I only mean to say, that the miasmata are not generated from the body of the lake or pool, but from its drying or half-dried margins. The swamp is no more than this margin rolled up under another shape. Water kept in stone tanks or any where so that it can be preserved in bulk, without being absorbed by the surrounding soil, gives out no morbid miasmata. One of the healthiest quarters in the West Indies, is that of the field-officers on Berkshire-hill, Saint Vincent's, the bed-room of which is placed immediately over a deep stone reservoir of water. A blockhouse in Demarara, reported to be one of the healthiest quarters there, is similarly situated; and it is known to all that the fresh water laid for

a ship's crew, however putrid, and however much in contact with their sleeping places, produces nothing like marsh fever amongst them. I contend also that it is very certainly generated from the paucity of water where it has previously abounded, provided that paucity be short of actual dryness; that a high temperature of atmospherical heat is indispensable towards its production, and that in proportion to the intensity of temperature, is the intensity of power in the miasmata produced, varying in its effects on the human frame, from the ordinary ague of Europe, and the fever of the mountains of the West-Indies, to the highest degree of aggravated remittent or yellow fever, which is never found remote from the level of the sea; that it is comparatively innoxious to those who have had the good fortune during healthy seasons to become habituated to its influence; and that it attacks with singular peculiarity of selection the robust, the young, and the healthy, in their first approach to its abode. If these be granted me, I think we may be able to explain from the various compositions of soil, its elevation, aspect, and texture, as affording capacity to retain moisture, why every dry one can be brought during an uncommonly wet season, through the influence of tropical heat, into the state of a marsh that gives out noxious vapours, and a marshy one approaching to dryness through previous draught may be made perfectly healthy from the same abundant rains.

A comparison between the present state of the islands of Barbados and Trinidad, will, I think, exemplify this. Every one who knows both countries must allow that the cleared calcareous soil of Barbados is by far the most salubrious of the two, and that Bridgetown, bad as it is, is much more healthily situated than part of Spain; yet Trinidad throughout has been perfectly healthy for several months past, while Barbados has been greatly afflicted with the very worst yellow fevers. In both places it has rained abundantly, particularly in Trinidad, where they may be said to have had ten months' rain out of the last twelve. These have preserved its extensive marshes ever fresh, and condensed the paludal gases; while they converted the alluvial soil on the shelves of table land at Barbados into temporary swamps. At Trinidad it ordinarily rains more than 200 days every year, to which the inhabitants owe their preservation in a great degree, from the worst marsh fevers. During a very dry season several years ago, they suffered most dreadfully from them.

On a smaller scale, and at one *coup d'œil*, an example of the same may often be seen in the island of Saint Lucia, where it has commonly been remarked, that when the garrison on the lofty position of Morné Fortuné is healthy during the fine dry weather, the inhabitants of the town of Castus, at the base of the same hill immediately below, within half cannon shot, are visited by the

worst fevers and *vice versa* : the dry weather gives activity to the miasmata, which the rains dilute, refresh, or condense, at the same time that they are forming pools and temporary swamps on the shoulders of the hill, immediately beneath the barracks, on the summit of Morné Fortuné.

We may likewise in the same way explain why a deep ravine, impervious to the rays of the sun and free current of the winds, that has been a water-course, or where water has stagnated in the wet season, may still, after its surface appears dried by the summer heat, have retained sufficient underground moisture to give out the most dangerous miasmata, the more dangerous because the more concentrated, from having never been dispelled by the winds. Why in fine, the healthy and unhealthy soils may, under such circumstances, change places in regard to health, and localities in the neighbourhood of each, under the same modifications of climate, be very differently affected.

In the attempts that have been made to establish the point of yellow fever being a new disease, and belonging altogether to a different family from that of the intermittent and remittent class, much stress has been laid on its seldom occurring at the same time with ague, and its rarely breaking off on convalescence into that type ; but, as has been said before, ague is not a common production, however obvious and abundant its sources may be,

in the hot lowlands on or near the level of the sea, where alone the yellow fever is found. It is very rare for instance, to hear of an ague originating in the leeward sea-port town of Basse Terre, Guadeloupe, either amongst the troops there or the inhabitants; but in the barracks on the cool marshy hills above the town, at an elevation of less than 1000 feet, it was a very common disease both amongst the officers and the soldiers, while their comrades of the same corps in the barracks of the town, suffered from the more concentrated forms of remittent fever alone. The same may be said of nearly the whole of the West-India towns. They are all so marshy that in colder latitudes they could not possibly escape being infested with agues, but these very seldom originate, and are nearly unknown amongst them. In this way it is common to hear the inhabitants of Barbadoes boast that an ague cannot be found in their island; although they have various marshes, particularly near Bridgetown, and during sickly seasons come in for their share of yellow fever. The reason is plain: there are very few ridges in Barbadoes of sufficient elevation to belong to the region of ague, even supposing their sides to be marshy which they never are (they are of the driest calcareous strata). The marshes are all in the lowest levels of land; and when their morbidic miasmata act upon the human body, they produce the greater or less concentrated forms of remittent fever, according as their powers are regulated by the temperature and



climate of the season, or as the subject is presented under more or less favourable circumstances of seasoning, excitement, &c.\*

This subject is not without difficulties, for it is certain that for years together, these supposed fomites of fever are comparatively harmless; and that at other times new comers suffer the worst attacks in places where it is difficult even to imagine the existence of any thing like marsh miasmata. Hence it has been usual in the West-Indies to believe that there are two forms of yellow fever originating from different causes, the one from the marsh poison, the other from pure excitement in the stranger, both so perfectly alike that the most experienced cannot distinguish any difference; but this surely is not more strange than that fevers exactly the same as marsh fevers, should originate in the driest ravines of hot countries, and that the effects of the Mediterranean, and I may add the Peninsular Malaria, are experienced in the most arid, often even elevated scites, where the existence of miasmata is certainly less demonstrable than in nine-tenths of the West-India localities.

I am far from presuming to deny (though I believe the contrary, for the reasons given in my answer to the queries upon the Regalia,) that there may be such a fever as that from pure excitement;

\* Vide Note at the End.

for soldiers and others have been attacked and died of yellow fever before they landed in the West-Indies, or could be exposed to the influence of land miasmata in any shape. From this it would appear that a calenture, the synocha of Cullen, (the pure offspring of heat, as pneumonia is of cold) runs a course similar to the yellow fever, and to use the language of the humoral pathologist, that the blood is broken down and dissolved by its action, the vessels of the stomach, and under the skin, giving way in a remarkable manner, the same as in what has been called the true Bulam. The inference to be deduced in that case, must be that all violent tropical fevers have a tendency to run into this corruption of the fluids, or morbid incontractility of vessels, as much as the synochous fevers in the hospitals of England are prone to assume the typhous types when long protracted.

To the argument that the highest degree of concentrated remittent or yellow fever, should neither remit nor break off into ague, it seems sufficient to reply, that for any disease to observe regular laws, it is necessary that the vital organs principally affected should continue in a certain degree of integrity; that their functions should only be perverted and disturbed to a given point; that they should still be discernible as functions, and not be utterly overwhelmed and extinguished by the violent cerebral action and speedy gangrene of the stomach that takes place in aggravated yellow fever. As

the ulcer of a specific poison that would run a regulated course according to acknowledged laws, if it be driven to a high inflammation or sphacelus, no longer belongs to the original stock, and is emancipated from those laws; so the violent actions of the above fever impair and destroy the animal functions by which its crises and remissions are regulated, or speedily engender a new disease; as new as the conversion of an ordinary venereal chancre into a phagedenic slough, through the application of a potential cautery.

I feel that this almost inscrutable subject is at present greatly beyond my depth: I wish only to shew that the difficulties of reconciling the phenomena of remittent with what has been called yellow fever, are not so great as what has been represented, nor greater than what exist in many other diseases, respecting the identity and origin of which the same difficulties have not been started. The difference between the different degrees of the intertropical fever, that are characterized by irritability of stomach, and terminate occasionally in discolorations of the skin or what have been called remittent, bilious remittent, and Bulam, are surely not greater than what we see daily in another disease at home, which, however, is propagated by different laws. There scarlatina will attack one patient in a form so mild, that but for the subsequent desquamation of the cuticle, it would be difficult to detect its existence. Another will have vivid erup-

tions and high phlogistic symptoms, while a third exhibits a low putrid malignant plague, with gangrenous sore throat, and scarcely any eruptions at all. No one thinks of doubting the identity of the disease in these three conditions, because they have all one common property, the capability of communicating the infection to others; but this last is not an essential quality of many other acute distempers, nor is it more characteristic than that of the Bulam fever being limited almost exclusively to the unseasoned and the stranger. It is surely more probable that the endemic causes of disease should operate upon their unseasoned bodies with peculiar severity, so as to produce something more than an ordinary remittent fever, than that they should remain altogether exempted from their operation, and even while the Creoles and the seasoned are suffering their limited share of endemic ills, be amenable solely to a peculiar contagion reserved altogether for their use, or imported with incomprehensible punctuality for the occasion of armaments newly arrived, sultry calms and long continued droughts, by which the exhalations from the earth are known to be sublimed into peculiar activity.

It is fortunate that amidst the labyrinth of conjecture in which the medical inquirer finds himself bewildered, there are nevertheless some points in regard to this fever, where he will find a firm

footing from which he is not to be taken down. These I would arrange in the following order.

1st. That the yellow fever never begins, and cannot continue to exist in a temperature of heat lower than the ordinary temperature of the tropics, on the level of the sea ; which temperature is not the ordinary one of agues, however moist the soil may be, but of remittents and the higher degrees of ardent fever.

2nd. That even within the tropics, it is confined in all the islands to the sea-coast ; and can only spread into the interior of continents where the country is flat and low, possessing little elevation above that level, and retaining the above temperature.

3rd. That it uniformly is more apt to arise and to spread where miasmata, or what would constitute the elements of intermittent or remittent fevers in colder countries, openly abound.

4th. That a comparatively high degree of bodily vigour and rigidity of fibre, such as the young sanguineous newly arrived European ordinarily brings with him to the West Indies, is for the most part essential to the developement of the disease.

5th. That Europeans suffer in point of priority

and severity of attack, precisely in the degree that they possess the foresaid vigour of constitution, and that when relaxed by long residence or other causes, they become like the Creoles and people of colour, in a great degree exempt from its influence.

The above positions I believe to be indisputable by any controversialist. They are proved by the evidence of many authors, and can be made evident to every observer. The more difficult points to establish (because not admitting of the same proofs) are that occult miasmata, to the amount that constitutes malaria, if I may use that expression, exist in most of the low leeward alluvial situations where strangers always first arrive at, and commonly reside.

By malaria as never belonging to open marshes, I mean to express something that is more decidedly than miasmata the product of underground moisture, which can only be sublimed, so as to produce its specific effects, by long continued solar heat ; a more subtle miasma in fact, of which the surface gives no warning, but of which the existence is proved from its effects on habitations that are placed in the drought of the dry ditches of forts, no matter how rocky or dry, if they are deep and of deep ravines. At Fort Matilda, in Basseterre, Guadaloupe, a well raised artillery store-house and guard-room placed in a bouchure, at the confluence

of two of the ditches, was found to be utterly uninhabitable. The best seasoned of our old artillery-men were sure to be seized with fever if they slept there a single night; there was a spring of pure water out of the rock in one of the ditches, the course of which was kept clear, but that made no difference in point of health. The same malign influence was observed to affect houses that were placed opposite the deep ravines of rivers, no matter how pure and pebbly the channel, as also all dwellings situated on the leeward base of the mountains.

Another point of inquiry is, whether these effluvia during certain states of stagnation of atmosphere, such as during the sultry calms of the hurricane months in the West Indies, accumulate in the dirty ill ventilated streets of West India towns, to the particular danger of all who are unseasoned to their influence; and whether the constitution of newly arrived strangers from colder countries, when attacked by fever in these situations, is prone to run into, or I should rather say, incapable of assuming any forms but those of the highest degree of ardent fever, from the circumstances laid down in the foregoing position, No. 4.

Why these miasmata should lie dormant for years, and then as if they had been accumulating all the while, burst forth with pestilential epidemic current, as they sometimes do, even to the destruc-

tion of the best seasoned, I cannot pretend to explain. I believe, however, that the healthiness of seasons in unhealthy climates will be found to depend less on the amount of actual heat and moisture, which has been so often observed and recorded with accuracy by scientific men, than on the ventilation of the climates by powerful regular winds, like the trade-wind between the tropics\*; that towns and districts of country will be found *cæteris paribus* to be healthy or otherwise in proportion as they enjoy more or less of this purifying influence; and that whenever it has been withheld for a time, the accumulated morbid emanations from underground moisture will act upon the human body like the accumulated typhoid principle in crowded hospitals, when undiluted with a due proportion of atmospheric air.

I think it must be evident that in these climates we are often on the brink of pestilence (I use the words pestilence and pestilential throughout this paper merely to signify epidemic) without being aware of our danger, and ignorant consequently of the means by which our escape has been effected. The presence or absence of rain, the continuance of calms, or accession of a particular wind at a particular time; the accumulation of people in towns, and the arrival amongst them of strangers at

\* For the last four months there has nearly been an extinction of this wind at Barbadoes.



particular seasons to furnish moral food for panic, and embody that principle so as to unnerve the whole community, and, when endemic disease breaks out, to give epidemic current : all these, in my opinion, act powerfully to influence the rise and progress of endemic fevers ; and they will affect different places as variously as the variety of their soils and the position and form of the country. Thus even to our imperfect knowledge the epidemic visitation this season of yellow fever at Guadeloupe, Barbadoes, and Antigua, while it has spared the equally or more unhealthy countries of Trinidad, Tobago, and Saint Lucia, and when imported into Saint Vincent's would not remain there, may appear less capricious and unaccountable. It would have done the same to the writers on the fever of Spain, if they had not dismissed all their doubts, and set inquiry to rest by attributing the whole to imported contagion. But had they inquired, instead of peremptorily deciding, they might have found that during the epidemic visitation of these fevers, not only do towns and districts escape altogether, as we see at present in the West Indies, but that different parts of the same town are differently affected : and so limited often is their influence, that one story of a house and one section of a ship will be strongly affected by it, while all other parts of the same tenements remain healthy, and then their wonder at what has been called the desultory progress of this fever during the short course of an European autumn, need not have been

so great as to have been inexplicable through any source but that to which they referred it. At Barbadoes our hospitals of late have been in a regular course of importation of the yellow fever from the navy, but not even inoculation has been able to produce the disease upon any member of the hospital corps, by whom I may truly say that the sick have been <sup>received</sup> with open arms; for the antisocial doctrines of ideal contagions are not preached amongst us here, to the prejudice of duty and humanity.

Hospital assistant Moon, on opening the body of a patient that had died of very aggravated yellow fever, wounded his finger. The wound produced high inflammation, similar to what occurs in the dissection rooms of England, running up the course of the lymphatics to the glands of the axilla, with symptomatic fever, but no more.

An example of the efficacy of quarantine laws where no contagion exists, may here be amusing. At Martinique they established a strict quarantine, particularly directed against Guadaloupe, and they have been consumed with yellow fevers; but at Dominique, Tobago, Saint Vincent's, &c. where they established none at all, they have not had, in as far as I have learnt, a single case, although at the last-mentioned island both the Tigris and Childers ships of war imported distinct well-marked instances of the disease from Point au Pitre, on the eve-

cuation of Guadeloupe. The first of the above ships continued healthy for nearly three months afterwards; the second has been the subject of a particular report.

It is now several years since the highest degree of remittent or yellow fever has prevailed epidemically in the West Indies. Sporadic cases have been constantly occurring, but this season it has visited in a remarkable manner some of the unhealthiest of the towns, such as Point au Pitre and Basseterre, Saint John's, Antigua, and Bridgetown, Barbadoes. In all it has been confined for the most part to the towns, and, except at Bridgetown, to unseasoned Europeans. There it extended to unseasoned sojourners, even Creoles from the interior of the country, who in the time of the insurrection were obliged to resort to the town on military duty. The French strangers from Europe suffered more severely in Guadeloupe than I had ever known any importation of similar numbers do in the British colonies. In no one instance was an attack of true yellow fever seen amongst the British troops there; but if any one doubted of their suffering from the same exciting causes of fever, though modified from the circumstances of seasoning, he might in the course of half an hour's ride any morning have satisfied himself of the identity of the three diseases, in the persons of the stranger expiring in his lodgings with black vomit and hæmorrhages (Vide Appendix No. 8.); the

seasoned soldier at the hospital close by, probably dying the same, under the regular type of remittent fever, with a retentive stomach and comatose brain; or the same description of subject, or planter of the country, undergoing the regular paroxysm of ague in the cooler quarters of Valtier or Beau Soleil Barracks, on the higher grounds immediately above the town.

At Barbadoes the distinction and identity has been still more nicely marked. There a perfectly raw newly arrived regiment (the Queen's) came out from England in May, and were quartered in Saint Ann's Barracks, on a comparatively elevated table of well ventilated rocky land, at a time that numerous civilian strangers were arriving at the hot unwholesome town within the distance of a mile, and the communication between the barracks and the town had not been restrained by any regulation. These last have been cut off in a great proportion by the very worst symptoms of yellow fever; but though the Queen's have lost many men from severe well marked remittent fevers, only eight\* of those amongst the equally unseasoned military arrived at the highest degree of yellow fever, as characterized by black vomitings and hæmorrhages. Their fatal fevers have often approached very near to it; the remittent form

\* Several more have occurred since this paper was written.

losing type as it always does, when aggravated so as to become ardent and continued, with constant vomitings ; but except in the eight cases just mentioned, none of them shewed the diagnostic symptoms of the very highest degree, which were almost invariably present upon those that died in the town.

The 25th and 60th regiments have in like manner had numerous cases that died with a yellow or fuscous livid skin after frequent vomitings, that were sometimes ropy and brownish, but never black. The colour of the matter vomited is not essential to constitute the diagnosis of this form of fever ; but the increase of the fluid ejected beyond what has been taken in, more particularly if glairy, certainly is, and decidedly marks the gastric affection.

Here within a very short space we see a minute modification of cause operating as minute a difference in the form of the fever ;—a precise one however, from which the inference is unquestionable, that the troops and their neighbours the Civilians were not on the same niche, but certainly within the same pale of morbid influences.

The difference of heat between the barracks and the streets of the town, as marked by the thermometer, has been seldom less than four, and

often as much as six degrees, during all the hot sultry days of the present season. How long they are to preserve that station of health is doubtful, for there are marshes in abundance immediately to leeward of Saint Ann's, which, in close sultry seasons like the present, have produced amongst the newly arrived military the very worst degrees of ardent tropical fever. And here, as marking the nicer shades of malarious influence, and the total absence of contagion, it may not be uninstructive to remark, that though the Queen's inhabited a large barrack in common with part of the well seasoned 25th and 60th regiments, they alone experienced any difference of health between those that inhabited the ground-floors and the upper story\* ; that no infection spread from their cases of black vomit among themselves, or to their comrades of the other regiments in the same barrack ; that they have lost no hospital servants from fever, and had scarcely any sick† ; that all the white servants in the hospitals at Barbadoes, though engaged in attending many of the worst cases of yellow fever that ever were seen as landed from the navy, have been healthier beyond all com-

\* Vide Appendix, No. 10.

† They have employed too their full share of hospital servants ; their sick, though victualled in the general hospital for want of a regimental one, being arranged there regimentally, and attended by their own medical officers and servants, under the direction of the physician.

pare, and suffered less from fever in proportion to their numbers, than any other class of military in garrison\*; and that no case of fever has occurred in the person of any medical officer, except one, who, for five weeks previously, had been stationed at a healthy military port in the country, remote from the theatre of fevers and from all the hospitals.

This remarkable exemption of the hospital servants, certainly goes to prove what has so often been observed here, that when the body is charged with the elements of fever, (whatever these may be), its immediate exciting causes are exposure to the heat of the sun, more especially when fatigued with exercise, getting wet, and drunkenness; to all of which the hospital orderlies were much less exposed than the troops in barracks. Of our medical staff, the physician and five of the assistants are of the class of the newly arrived, and amongst the rest, few have had the benefit of the preservative (a previous attack) mentioned by Mr. Pym. The hospital assistant that died was stationed in one of the healthiest posts of the West Indies, where, with the exception of one woman, there has not been a single case of fever reported during the whole season. His death was accounted for in the statement I transmitted of his case.

I have dilated upon these facts because it is only

\* Vide Appendix, No. 11.

from observations upon masses of men, and comparisons made under different circumstances, that well founded conclusions can be drawn in respect to the causes and properties of disease. Thus whoever has seen the greater portion of an army affected with dysentery or a particular kind of fever, with hundreds of cases and facts constantly before his eyes, can scarcely fail to know whether these diseases are contagious or not. The physician in civil life, however superior he may be in learning and talents, as he sees only insulated cases, cannot have the same advantages, and must be much more liable to form erroneous conclusions. He may see for instance, during the autumnal season of Europe, the inhabitants of a humid unwholesome house fall ill with dysentery one after the other, according to the degree of predisposition or stamina of resistance in the respective individuals, and thence conclude with much apparent justice, that dysentery is a contagious disease; but take him to the well regulated encampment, and shew him in its hospitals, what every experienced medical officer has seen, a thousand dysenteric patients attended by a hundred servants, without affecting one of the attendants, he certainly would for ever be cured of the delusion. In like manner, when he comes to practise in a West India town, he may find a yellow fever in an endemial house, (if I may use the expression), which, in conformity to the above rule, attacks in succession all its inhabitants, and from thence make his proclamation of contagion to the af-



frighted people; but if he stepped to the neighbouring military hospital, and saw the same description of patients mixed in every conceivable variety with the convalescent, the surgical and the healthy, yet affecting no one, he would never after that, whatever he might say, believe it to be a contagious disease.

A remarkable instance of this lately occurred here, in the practice of Dr. Caddell. Two Creole ladies inhabited an insulated house, in the low suburbs of Bridgetown. It was ascertained that partly through indolence or fear, neither of them had gone out beyond their own premises for ten weeks previously, yet at the end of that time, and without any discoverable or even supposable communication with the sick in the town, both took the yellow fever, and one of them died of the black vomit.

Unfortunately these opportunities of observation are not always sought for; and as experience of yellow fever in civil life, is often trifling, limited to particular seasons and circumstances of exposure in the subject, he may, though <sup>defect of</sup> ~~difficult to~~ experience, believe in his doctrines of contagion to the end, and do his utmost to alarm the public; but the military medical officer, who has once seen the disease in the gross, as it affects newly arrived troops here, never can be deceived in respect to its non-contagious character, (if his mind be capable

of distinguishing truth from error,) and in fact never is in these climates.

Another reason why, for a course of years, there has been little yellow fever in the West Indies, may also be, because the pabulum of the disease has not been supplied from the colder regions in the wonted quantities. The last importation of troops in regiments previous to the arrival of the Queen's being upwards of seven years ago, with the exception of two regiments, the 4th <sup>battalion of the</sup> and 60th, composed of foreigners, and the York Chasseurs, composed of deserters of all descriptions, and <sup>the</sup> crowds of civilians that used to shoal out and perish here, having found employment through the circumstances of the war elsewhere. All the regiments however now here, so long underwent the ordeal of seasoning in no long time after their arrival, and buried a large portion of their youngest soldiers. The recruits that successively came out to them fared better; instead of finding themselves in a community at their first arrival, where all was inexperience and panic, they became at once members of a healthy seasoned body, and were taught by experienced officers as well as by the experience of their comrades, how to take care of themselves. In this way confidence was inspired, and they suffered but little; but if new regiments are to be sent out in corps, and the current of emigration is again to be directed towards the colonies, it will soon be seen that the yellow fever was only weak.

ened from want of its proper food, and that it will again prevail for as long as that food is supplied.

I trust that in the foregoing, and in the Appendix subjoined, it will be seen that I have adduced some facts, and supported them by reasonings, to shew that the remittent, the bilious remittent, and the Bulam, belong to the same family, and are only different degrees of intertropical fever ; that they, no more than other severe fevers, exempt the patient from suffering subsequent attacks ; that under ordinary circumstances of ventilation, they are not contagious ; that their origin is always endemic ; and that therefore the idea of their ever being propagated from imported contagion is chimerical.

Under the contrary circumstances I have no doubt but that a typhoid infection may exist here the same as elsewhere, which, however, is certainly dissipated, as soon as ventilation and purity are restored. This was exemplified in the Childers brig that lately arrived at Barbadoes, in so distressing a state from Trinidad. The fevers on board of her from crowding below decks when at sea, ceased to be yellow ones, and became as truly typhoid as any I ever saw ; but all that were taken ill after she came into harbour, <sup>and</sup> were promptly removed to our excellent hospital, retained the character of yellow fevers in every respect, and shewed not the least of the typhoid type. That the ship was impregnated with a typhoid contagion, capable

of infecting others within its sphere, I have as little doubt; and am sure from what I have seen, that crowded hospitals on shore may be brought for a time to the same dangerous condition from undue accumulation of sick, even in these climates. Some well marked cases of typhous fever, and others of a mixed nature, have lately been sent to the hospital, from the huts in the rear of the barrack of the Queen's regiment, into which the married people of that corps crowded in great numbers, and they had become in consequence dirty and ill ventilated to a very great degree. Some of these huts, containing more than one family, where washing and every species of nuisance and disorder was to be found, did not contain more than ten feet by eight within their walls, which were of the thinnest shingles, and afforded little or no protection against the sun's heat.

I cannot pretend altogether to say, that I have proved these points; for how few amongst the ever changing phenomena of diseases, admit of being subjected to the rules of evidence! and I am aware of how much I have been favoured by circumstances, and of what a different interpretation the facts I have collected would have borne, had the present epidemic that now afflicts the islands broke out in the ordinary course of the seasons a year earlier, at the time the Regalia was here; for these, instead of assisting me to elicit the truth in the manner they have done, would in that case have been turned to

the confirmation of error, and the perpetuation of the delusion in regard to imported contagion.

Signed,

W. FERGUSON,

Inspector of Hospitals.

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NOTE

Barbadoes, with the exception of Bridgetown, is the healthiest of the islands, because it is the best cleared, and has no mountain lines to obstruct the sea breeze. The soil is calcareous, disposed for the most part throughout a successive series of ridges on shelves or tables of land without rivers or water-courses to carry off moisture ; but the trade wind makes a constant breach over it, to use a nautical expression, night and day ; and though it has marshes, they are so uniformly swept by the current of air, that a stranger is stared at when he inquires if they are not unwholesome. In fact they rarely prove injurious to the health of the seasoned settlers, though they are highly capable of being so in close sultry weather, like that of the present most unnatural season ; but to tell them so either in Barbadoes or elsewhere, would only be a waste of words. Whoever has escaped for a season, can never afterwards be made to believe that the marsh is unwholesome either to himself or to others, and when overtaken by endemic fevers, he lays the blame on the sun, the moon, atmospherical vicissitudes, errors in diet, or infection, &c. Even the medical men, who

ought to know better, are often thrown off their guard by this delusion of experience, and from being themselves in unwholesome localities, give countenance to the errors of the people. No one, after he has once committed himself to a choice of residence, likes to be told that from want of knowledge he has acted without due precaution, and he cherishes and defends the error, like the virtuous prejudices of national partiality, even though he himself should fall a victim. In this way the attempt to convince will generally be vain. The inhabitants will continue to live where they have lived before, often escaping themselves, but still more frequently deluding the unseasoned to their destruction. Bridgetown has abundance of marshes even to windward, yet no one ever thinks of draining them, and when the stranger is startled at their appearance, the inhabitants point to their old men and bid him dispel his fears. Two Generals'\* families ~~flourished~~<sup>per</sup> bodily within the last 12 years, at the Government House on the outskirts of the town; yet for all that time and for how much longer I cannot tell, there was till very lately a foul open piece of swamp behind one part of the premises, which could have been thoroughly drained at any time by sinking for a few yards a drain of two feet in depth.

\* Sir William Myers, and General Grenfield.

## APPENDIX I.

**Extract of Inspection Report to the Commander of the Forces, on the State of the Regalia Transport on the 26th of September, 1815, then appointed to carry home Invalids to England.**

1. That the crew on the coast of Africa was healthy till the blacks were sent on board.

2. That about the same time that the blacks embarked, a quantity of green wood was laid in for fuel.

3. That soon after the fever broke out, and several were taken ill, and two died the first day after sailing.

4. That the crew continued to fall ill one after another on the passage, until all except one boy had suffered attacks of fever, and five out of twenty-one had died before arriving at Barbadoes.

5. That the captain's wife sickened and died after making the harbour where the ship remained four days, and that the captain immediately after sickened and died, on the passage to the Saints.

6. That the ship remained two days at the Saints, after which she sailed for Antigua, where she remained three days before returning to Bar-

badoes, during which time a mate that had been shipped at Barbadoes, from another of the African ships reported to be healthy, sickened and died. Also a boy that had been taken at Barbadoes from the Lord Eldon, then a perfectly healthy transport, fell ill and was sent to the hospital; and the apprentice to the ship, the only individual that had hitherto escaped, for the first time took the fever.

7. That on her return to Barbadoes she shipped a new mate from a healthy Newfoundland ship, who on the ninth morning of his being on board, was found by me in a state of fever, and sent to the hospital.

8. That during the passage from Sierra Leone, and the short voyages through the islands, she has been under a constant course of fumigations by fires and otherwise; that she has now been fresh painted, and is at present, and according to every evidence that could be collected, has been in as clean a state as possible.

9. That all who died were affected with vomitings and bleedings from the mouth, nose, and other places.

*Addenda.*

10. That the Regalia shipped three fresh men about the time the crew commenced the work of clearing her hold, one of whom took the fever and



was sent to the hospital in Barbadoes, and another died at Guadaloupe of the yellow fever on her passage home.

11. That no yellow fever existed at that time in Bridgetown, amongst the ships in the bay, or the troops in garrison; the first case of yellow fever that was heard of in the town, occurred about the beginning of the succeeding year, in the person of a youth, a stranger from Europe, belonging to one of the mercantile houses, and that for more than twelve months after the arrival of the Regalia, none but insulated sporadic cases of that disease were known in Barbadoes.

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## APPENDIX II.

Extract of a Communication to the Commissioners for Transports, on the supposed Infectious Property of Yellow Fever so called, by Mr. MORTIMER, Principal Naval Medical Officer at Barbadoes.

We do not allow the fever of the West Indies commonly called "yellow fever," to be at all infectious in any of its forms or stages.

"We have never known of an instance of its communication to patients at the several naval hospitals, whilst under cure for other complaints,

though such patients have never been interdicted, on the contrary, encouraged to offer every additional aid, for the greater comfort of their suffering brethren.

“ We are of opinion, in contradiction to that stated to be Dr. Bancroft’s, that vapours emitted from holds of ships, having in them the commixture of various animal and vegetable substances, in a state of putrefaction, are quite sufficient for the production of the worst kind of Bulam fevers; that to such effluvia may be justly attributed much of the depopulation occurring amongst Europeans in intertropical climates.

“ We are borne out in this opinion from the numerous examples happening in our own practice, a few of which have been related, and of others made known to us by men of indefatigable research, and of unquestioned veracity.

“ We have shewn in the history of the Regalia Transport, that she continued perfectly healthy during the several weeks she was employed on the African coast, and until she shipped a quantity of green wood, cut down and brought on board the same day. We have it in proof that fever made its appearance soon afterwards; that it prevailed with unabated malignity on her arrival at Barbadoes, where it was asserted she had imported in

the persons of black recruits a highly pestilential disease.

“ We have it furthermore in evidence, that whilst at English harbour she underwent fumigation as ordered by Commissioner Lewis, without the least effect in arresting future attacks, or their fatality ; and that it was not until after her arrival in Carlisle Bay, where she was *completely cleared, and with her hatchways closed, her whole hold exposed to the concentrated heat of many stoves, that fever ceased.*

“ That the causes existed in the vessel, and that they were of most malignant kind, are evidenced by their speedy effects on every man engaged to renew the place of the one dead ; and if to the most incredulous further proof were deemed necessary, it might be adduced in its fatal operation on the cook of the ship (a man who died here), a man upwards of fifty years old, and the only one of the original ship’s crew, who had, up to the period of the cleaning of the hold, been exempted from seizure.

“ I have particularized this ship, because she is not only the most recent instance of the decided effects of the noxious effluvia on the human constitution ; but because, to the authority and weight of representation from Dr. Fergusson, Inspector of

army hospitals, may be attributed the prompt clearance of the vessel, and I fully believe therefore, the safety of many lives."

Signed,

JOHN MORTIMER.

### APPENDIX III.

Report of Deputy Inspector FORBES, on a Case of Fever belonging to the Regalia Transport, that terminated fatally in the Navy Hospital at Barbadoes.

"James Champion. Case of fever which terminated fatally.

"On Sunday he was seized with long and continued rigors, succeeded by a short period of heat, pain in the eyes, loins and lower extremities; belly costive; these symptoms subsided altogether, and he remained well till the next day at three o'clock, when a similar attack recurred, and he was received at the Naval Hospital at noon this day. The belly continuing bound, purgatives were administered with such relief, that in the evening he again considered himself well. The following day his eyes became of a dark red; he complained of a deep seated pain in his head, and accompanied by great increase of heat; blood was then drawn from the

arm and temporal artery ; large doses of calomel were administered, also friction with mercurial ointment ; a blister was applied to the head, and sinapisms to the feet. These symptoms continued until Wednesday, when they became accompanied with constant vomiting, the fluid exhibited a coffee colour, and latterly much affected with spasm.

“ He died this day at two o’clock, P.M.

*Dissection.*

“ The head and stomach exhibited great marks of inflammation ; the vessels of the meninges were loaded with blood ; the surface of the brain, especially in the course of the longitudinal sinus, very turgid ; the outer coat of the stomach as though rubbed off by a blow, and the inside surface in several parts of a mottled appearance, and contained about half a pint of fluid of a dirty brown hue ; the gall-bladder was distended with fluid of the same appearance ; the liver was spotted in various parts ; the other part of the viscera did not exhibit any marks of disease. The body was not in the least discoloured after death.

“ This man had been ill for some days previous to his being sent to the hospital, and by the man’s own account, seems to have been brought on by

sleeping on deck, and getting thoroughly wet, and remaining in that state without changing."

Signed,

P. FORBES,

Deputy Inspector.

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#### APPENDIX IV.

Report of Acting Staff Surgeon AYTON on a Case of Fever that terminated fatally, on Board the Regalia Transport, Basseterre Roads, Guadeloupe.

*Vauclers, Guadeloupe, February 27th, 1816.*

SIR,

"In compliance with your request, I beg leave to state to you, that I visited the transport ship Regalia, on her arrival here from Barbadoes, I believe early in the month of last November. I inspected the ship's crew, and found them perfectly healthy with the exception of one man, who I was told had been ill three or four days: he was a stout young man, of a full habit: he complained of pain in the fore part of his head, with sickness of stomach; the eyes were suffused, the tongue loaded, and there was a dingy yellowness about the neck: the pulse was a little quickened, but not irregular or hard, and the skin moist with no very great degree of heat. I could not exactly ascertain what

medicine he had taken, but I directed the following to be given him immediately;

R Hydr. Submur. gr. x.

Pulv. Jalap. ʒj M. ft. pulv.

this was about three o'clock in the afternoon; the next morning as I was proceeding to the beach to go on board, I met the captain of her who informed me the man had just before died, having previously vomited a quantity of black matter."

Signed,

R. AYTON,

Acting Staff Surgeon to the Forces.

To Dr. Fergusson,

Inspector of Hospitals, &c. &c.

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## APPENDIX V.

Extract of Inspection Report on the Island of Martinique, by DOCTOR MENZIES, Deputy Inspector of Hospitals.

" The Bomb-Proofs are excavations made in the rock below all the works, and near the level of the sea. On the right of the road, betwixt the first and third of these, the rock is of soft sandstone; the entrances are on a level with the road, and the square openings intended as windows somewhat higher. The height of the apartments is eight or nine feet, the breadth about twelve; they are neither paved nor floored, and there are no ham-

mock rails, nor the appearance of there ever having been any : indeed they have seldom been occupied except during a siege. In rainy weather there is an oozing of water from the roof and sides anteriorly, which renders them damp. Some part of the rock above these Bomb-Proofs, has the appearance of a concretion of sand and small stones. There are, at one end, interior rooms with arched passages leading to them, and air-holes cut perpendicularly for the admission of light, and which may create some ventilation.

“ The principal remarks that seem to offer regarding the salubrity of these as a quarter for troops, are the uncommon lowness of them, there being a barrier gate at each end ; a wall of fifteen feet directly to windward of them, and no thoroughfare, nor means of creating a draught of air, except the partial air-holes alluded to, as well as the necessary dampness, both from the nature of the rock, and from the non-admission of air to purify, and to correct humidity after rains ; and these independent of the general situation of Fort Edward, in regard to the surrounding country.”

Signed,

ALEXANDER MENZIES,  
Deputy Inspector of Hospitals.



## APPENDIX VI.

## Extract from the same Report.

“ In the third of these ravines, but by much the most considerable, is the village of Case Pilote, built on the beach. There is a church and endowment for a clergyman : the soil seems good, and the sugar-cane grows on a small scale. There are two streams that run into the sea upon each flank of the village, and the wind observes the same course as at Case Navierre. The extreme breadth of the ravine did not appear to me to exceed three-fourths of a mile in the broadest part, and not more than one-fourth at the village ; and the apparent extent towards the mountains, not more than a mile, at least, before the view terminates. I have not learnt that to the natives this place is unhealthy ; what it might prove to new comers I have some doubt ; from analogy drawn from other places similarly situated, I should not consider it as healthy. One of these streams takes a sweep and terminates in a serpentine pool of almost stagnant water, close upon the village. The ground adjacent, to no great extent however, is low and swampy. The principal remarks that occur respecting the salubrity of this place, are its being confined in its extent, surrounded with uncultivated grounds, having a partial swamp, not inconsiderable in comparison to the limits of the place ; and its being exposed to the oblique rays of the descending sun, on the shore at

the foot of the immense steep mountains, and those bearing north-east almost directly to windward."

Signed,  
ALEXANDER MENZIES,  
Deputy Inspector of Hospitals.

### APPENDIX VII.

Deputy Inspector FORBES's Statement of Admissions, Deaths, and Discharges, of the unattached African Recruits.

Periods.		Admitted.						Died.				Discharged.	
		Fevers.	Fluxes.	Pneumonia.	Dropsy.	Ophthalmia.	Ulcers.	Itch.	Fluxes.	Dropsy.	Pneumonia.	Ulcers.	Fevers.
From	To												
Aug. 24	Aug. 26		49	6	4	6	35	14	4				
27	Sept. 2		18			12	13	23	10	1			
Sept. 3	9		15	2	4		3	12	9	1	2		
10	16		8						8	3			
17	23	7	6			10		7	1	2	1		
24	30		4			3	5	9	1	2		1	
Oct. 1	Oct. 7	1	4			2		2				1	
8	14		3	3		3		1					
15	21		4		1			1	1				
22	24	1		5		2		2					
Total		9	111	16	9	21	73	49	53	5	9	1	2
												218	

## APPENDIX VIII.

List of Persons who have lately died in Basse Terre,  
Guadaloupe, May 1st, to May 31st.

Names.	Age.	Disease.	Period in the Island.	Period ill.	Leading Symptoms of Disease.
MM <sup>rs</sup> . Didier.	23 ans.	Fievre Euro- péenne.	4 mois.	5 jours mort.	Vomisse- ment noir, hémor- rhagie na- zale et alyine. Vomisse- ment noir, hemor- rhagie na- zale. idem et idem. idem. Vomisse- ment noir.
Huges.	25 ans.	idem.	4 idem.	6 idem mort.	
Mad <sup>me</sup> . Denault.	11½ ans.	idem.	Créole.	6 jours mort.	
MM <sup>rs</sup> . Berville.	30 ans.	idem.	4 mois.	7 idem idem.	
Emar.					
Bernard.	35 ans.	idem.	4 idem.	6½ jours mort.	
Blanchet.	20 ans.	idem.	4 idem.	7 jours mort.	
Goudrie.	30 ans.	idem.	2 mois.	7 jours mort.	
Sandré.	24 ans.	idem.	2 mois.	2 jours mort.	
Mad <sup>me</sup> . Guenet.	10 ans.	idem.	11 idem.	4 jours mort.	

Mr. Loriol died in June at the three Rivers; he was just arrived from Europe. Three days illness; black vomiting. One Provençal dead three days ago of the same illness. Seventeen days illness. 12 June.

Signed,  
"CHEROS."

## APPENDIX IX.

List of Persons who have died in July 1816, Basse  
Terre, Guadeloupe.

Names.	Age.	Disease.	Period in the Island.	Period ill.	Leading Symptoms of Disease.
MM <sup>rs</sup> . Cantournet.	30 ans.	Fievre Euro- péenne.	un an.	6 jours.	Vomisse- ment noir, hémor- rhagie na- zale et alvine.
Nayent.	23 ans.	idem.	6 semaines.	60 heures.	idem idem
Thoret.	27 ans.	idem.	6 semaines.	4 jours.	idem. Vomisse- ment noir, seulement.

The above returns have been furnished by Mr. Cheros, a French surgeon, employed by the British government, in the colonial duties of the Port at Basse Terre, Guadeloupe. His opportunities of information were limited, his practice not being extensive; but his education is good, and he stated that he had himself seen all the cases detailed. He calls the fever that of the Europeans, the name commonly given to the yellow fever in Guadeloupe. His return for the month of June has been mislaid.

Signed,

W. FERGUSSON,

Inspector of Hospitals.

## APPENDIX X.

Report from Assistant Surgeon RALPH, of the 2d, or Queen's Regiment, on the Difference of Health between the upper and lower Stories of the Barracks occupied by that Corps.

“ By a calculation made from the above Table, it appears that in the month of August, one case of fever presented itself in every *twentieth* man of those quartered on the *ground floor*, and in each *thirtieth* man of those on the *upper floor*. During that part of the month of September, which has elapsed, *each twenty-fourth* man was attacked with fever of those stationed in the upper rooms, and *each fourteenth* among those in the *lower*.”

Signed,

A. J. RALPH.

## APPENDIX XI.

Comparative Sick Return of White Soldiers employed as Orderlies, in the General Hospital at Barbadoes, from the 25th of June, to the 24th of October, 1816.

Number of Orderlies employed during the period.	Number taken ill of fever.	Number who died of fever.	Proportion taken with fever of the number employed.	Proportion of deaths amongst the Orderlies.	Proportion taken with fever from the total strength amongst the troops in garrison.
198	7	2	as 1 to 28	as 1 to 99	as 1 to 5

N. B. It is ascertained that of the Orderlies discharged by their own desire, or for misconduct, none came back as patients. One of those returned as having died from fever, was a very drunken character.

Signed,

A. MENZIES,

Deputy Inspector of Hospitals.

## APPENDIX XII.

Extracts from the Reports of Staff Surgeon LOINSWORTH, P. M. O. of Grenada, on the State of the 15th Regiment, on their arrival there from Martinique, dated 12th and 20th of September, 1816.

“ The 15th regiment have brought with them about seventy men as hospital patients, and nearly half the regiment as convalescents in barracks. I think I never saw a corps more dreadfully cut up from fever, I understand of the intermittent kind.

“ We still continue with a heavy sick list, and to judge from the appearances of the men of the 15th regiment, I apprehend it will be some time before they recover, or our numbers in hospital diminish. This day we have in hospital one hundred and forty-four of that number, ninety-eight are of the 15th regiment, independent of a numerous convalescent list in barracks; indeed so debilitated are the men, that the slightest exertion or fatigue brings on relapses of fever, and sends them into hospital. I have therefore thought it advisable to make a requisition for wine, as the expenditure for some time will probably be great.”

Signed,

F. A. LOINSWORTH.

ON THE  
INTERNAL AND EXTERNAL USE  
OF THE  
**NITRO-MURIATIC ACID,**  
IN THE CURE OF DISEASES.

By H. SCOTT, M.D.

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*Read March 4, 1817.*

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**I** HAVE been assured by several members of this Society, of which I have the honour to be an associate, that some account of the way in which I have long been in the habit of employing the nitro-muriatic acid, would be acceptable to this learned body. Such an account has become the more necessary, as many persons have begun to employ the remedy in question with little information as to its effects or its management. It is capable of producing more remarkable changes in the human body, and with less disturbance of its functions, than any other substance with which I am acquainted.

I had not been long in India before I had reason to think that the oxides of mercury were of the



utmost importance in the treatment of many diseases of that climate, such as chronic and acute hepatitis, dysentery, flux, asthma, and of some other complaints. I became convinced, for instance, that in obviating abscess of the liver, we can trust to nothing but the mercurial preparations. Whenever the habit is impregnated with mercury to a certain degree, which the state of the salivary glands, and other constitutional effects, sufficiently indicate, the patient remains quite free from the danger of abscess. I have long thought that when such a misfortune does occur, it is to be attributed to want of medical skill, or to the application of the remedy at too late a period, after some change of structure, necessarily ending in abscess, had taken place. Though blood-letting, blistering, purging, together with the other parts of the antiphlogistic treatment, may occasionally be useful, they are not to be put in competition with a proper use of the oxides of mercury, without which we can seldom remove any severe affection of the liver, whether it be acute or chronic.

Entertaining this opinion of mercurial preparations, I was yet very frequently much dissatisfied with their effects. Patients labouring under hepatitis were often freed from the risk of abscess; but a state of such extreme weakness, perhaps, had been induced by the disease, or by the remedies employed to subdue it, that, on a recurrence of the disorder, they resolved to endure all the miseries

attending it, rather than return to a treatment which they had found to be so distressing. In this resolution they might persist for a time, but at last would fly to the remedy as a less evil than that by which they were kept in a state of suffering so exquisite and so hopeless.

In my first trials with the nitric acid as a substitute for mercury, and indeed for a number of years, I used the acid procured from impure Bengal saltpetre, by means of alum. The acid thus obtained was really a mixture of the nitric and muriatic acids, the latter being derived from the muriates of soda, of lime, and of magnesia, with which that salt is so largely contaminated. I long believed that all the good effects, which I saw this acid produce, arose from the *nitric acid* alone, and I took measures at last to get it in a state of very considerable purity\*. In the effects, however, of my purer acid, I was sadly disappointed; for although it did by no means cease to produce some salutary consequences, yet they were less decisive, less valuable, and of a different kind. I now reflect with satisfaction, that I published at that time an account of my materials and my process, so that the public had the same means of forming a judgment, that I myself possessed.

In a paper on the nitric acid, printed in India,

\* See No. II. of the Journal of Science and the Arts, 1816.

in the year 1796, and reprinted in London, I gave an account of my process, and of the materials used for obtaining it, to which I added the following words. "As the nitre that I have used contained about six per cent. of sea salt," (here I seem to have taken no account of the other muriates,) "it will be evident that the acid which I obtained is not a pure acid of nitre, but it is a mixture of the acid of nitre and oxygenated muriatic acid, or it is an aqua regia, in which the marine acid bears a small proportion to the acid of nitre; as this is precisely the case with the acid of nitre from Apothecaries' Hall, with the effects of which I was well acquainted from experience, I was less anxious to separate from my nitre the whole of the marine salt. This is the acid that I used in all my trials. It is more agreeable to the taste than the acid of Europe, and more salutary, if I mistake not, in the living body."

I left India in very bad health, and long remained ill in this country. During this period I often reflected on my experience with the acids, and resolved, as soon as an opportunity should occur, to return to the use of the nitro-muriatic acid, and to satisfy my mind on the subject from further observation. Above a year ago I came to London, and had an opportunity of getting the nitro-muriatic acid employed to a considerable extent. At first, I mixed three parts of nitrous acid with one of muriatic, in order to imitate the acid I had used in

India. Of late, however, I have employed the acids in equal weights, and I give a preference to this proportion ; but there may be others still more efficacious which time will discover.

Although I had reason in India to be satisfied with the general effects derived from this acid, yet considerable inconvenience attended its internal use. If it were not given with great caution, it injured the enamel of the teeth, though not their roots, as mercury does. Even in small quantities, it disagreed with some stomachs, and few individuals indeed could continue it sufficiently long, or in a sufficient quantity to remove from the system the symptoms of secondary syphilis. These difficulties made me anxious to ascertain whether or not the acid externally applied would produce good effects. I accordingly employed it in this manner in various cases \*, and I immersed my own body up to the chin in a bath of this acid, sufficiently diluted with water. I fortunately have preserved the memoranda that I made at the time, of which the following is a copy.

“ *Bombay, 27th April, 1798.* I bathed to-day in an acid bath, which was merely acidulous. It covered the whole body below the head. I staid in it for half an hour, and it was nearly of the

\* See a letter published in July 1797, and republished in Dr. Beddoes's Collection.

temperature of the body. I feel no particular effect from this bath. It is fully as pleasant as water, and cleanses the skin like a soap.

“ *April 28.* I bathed again to-day, keeping the bath at the same temperature, or making it rather higher, and of the same strength with regard to acid. I staid in it half an hour. I still feel no material effect from the bath. Pulse after bathing 76°. The only apparent action of the acid is on such animal matters as are unprotected by life, with which it forms an acid soap. Would it not deprive feathers of their oily smell?

29th. Bathed again, and continued as before for half an hour in the bath. To-day the bath was hardly so hot as the body. About half an hour after bathing yesterday, I became sensible of an odd sensation about my gums, my jaws, and my teeth.

“ 30th. Bathed again, and staid half an hour in the bath. It was rather warmer than my body. Since yesterday I have been sensible of some uneasiness in my throat on swallowing. I feel a disposition to salivation at times, but I am otherwise well. My gums both above and below, are somewhat reddened. I was for some time disposed to ascribe these effects to imagination, but they have continued all this day, and leave me no doubt of their reality. I am in good health.

" *May 1st.* Since yesterday I have felt some pain in my throat, especially on swallowing. This pain seems to follow the course of the oesophagus. During the whole of this forenoon I had a sense of *burning* over the roof of my mouth, and down the gullet. This sensation is like what arises from having chewed an acrid vegetable substance, and is so unpleasant, that unless it leave me by to-morrow, I shall bathe no more. To-day I bathed as usual, staying in the bath for half an hour. It has been to-day, and in general, so acid, as to make my skin smart a good deal in many places.

" 2nd. My mouth, &c. though not in the least ulcerated, is somewhat pained. I am sufficiently convinced of the great power of this bath, and shall bathe no more. My digestion is improved, and I feel that my liver, unclogged by disease, is doing its office with facility, which for some time past has not been the case with me.

" 6th. I have not bathed again, but I still feel the effects of the bath in my mouth. My appetite is now good, and I sleep with tranquillity, which I had not done of late. With all this my pulse is quicker than usual, and I am sensible of some degree of languour. It is, however, to be observed, that the weather is very hot; the thermometer being, during the day, in the shade, from 92 to 96 degrees of Fahrenheit.

“ In order to get a delicate test for acidity or alkalescency, I have been accustomed to rub the red petals of the *hibiscus rosa sinensis* on white paper, where they leave a blue-coloured stain. I observe when under the influence of the bath, the urine no longer turns this colour red, but destroys it altogether.

“ *June 6th.* For a fortnight after giving up the bath, I was sensible of some of its effects about my mouth, and my pulse remained too quick. I am now remarkably well. My liver seems to be sound, and I have experienced a happier change than I ever did from mercury.”

After this I used the nitro-muriatic bath in a variety of cases, and often with agreeable results. I now wrote another letter, giving an account of its powers : this letter was published in London, but it attracted very little attention, being tried by few individuals. When I came to London, and had it in my power to have the nitro-muriatic bath employed for various states of disease, I was, as may be supposed, very anxious to know if it could be as commonly applicable in this climate as it is within the tropics. I have been much pleased to discover that it gives here the very same results that I formerly derived from it ; nor are the maladies for which it may bring relief, less general in this country than in India. On the contrary, they seem to be still more abundant.

The acid that I have used of late is the nitro-muriatic ; and it is formed by mixing together equal parts of the nitrous, or nitric acid, and muriatic acid. If these acids be in the state of concentration that they usually possess in the shops, and if the quantities be considerable, a great volume of gas is evolved on their coming into contact, which taints every part of a house, is extremely hurtful to the lungs, and disagreeable to the smell. To avoid all this inconvenience, I put a quantity of water, at least equal in bulk to both the acids, into a bottle, and I add the acids to it separately. This method does not only prevent the unpleasant odour, but it tends to retain the chlorine on which its effects depend. It is well known that the nitro-muriatic acid acts very readily on the metals and earth ; nothing therefore but glass, or extremely well glazed vessels of porcelain, should be used to contain it. Wooden tubs for bathing answer very well, and they should always be made *as small as possible*, compatible with their holding the body, or the limbs that we wish to expose to the bath. From their being small we save acid, and are able to heat the bath with ease. In India I have often exposed the whole body below the head to this bath ; but here I have been satisfied in general by keeping the legs and feet exposed to it. In order to warm the baths after the first time, I have commonly made a third or a fourth part of it be thrown away, and the loss replaced



by boiling water, and a proportional quantity of acid. To save the expenditure of acid, I have occasionally warmed a portion of the bath in porcelain vessels placed near the fire, but I fear this may diminish its effects.

It is no easy matter to give directions with regard to the degree of acidity of the bath. I have commonly made it about as strong as very weak vinegar, trusting to the taste alone. The strength should be regulated by the degree of irritability of the patient's skin. I may say, that although I like to know that it is strong enough to prick the skin a very little, after being exposed to it from fifteen to thirty minutes, yet I believe that even such an effect as this is unnecessary.

The time, too, of remaining in the bath, in order to produce the greatest effect, is a matter of doubt ; I have kept the legs and feet exposed to it for half an hour or more ; but with more delicate people not above one-half, or one-third of that time. I have repeated these baths daily, or even twice or thrice a day.

I must now observe that the mere sponging the skin with nitro-muriatic acid, sufficiently diluted with water, gives rise to the very same effects with bathing, and is more easily applied. Fifteen or twenty minutes may be employed in the sponging, though I have found that a much less time does pro-

duce very material effects. When the bathing or sponging is carried to a considerable extent, and when the system is much under its influence, a sense of weakness comes on occasionally, some nervous irritation and restlessness are felt, a taste of metal (generally compared to that of copper) becomes sensible; a sense of pain occurs in some part of the palate or mouth, which is not permanent, but comes and soon goes off again. At length little specks or small ulcerations, extending no deeper than the cuticle, are seen on the interior surface of the mouth, and over the tongue, so that some degree of excoriation or rawness is at last produced. This is attended by a considerable discharge of saliva, with an increase of the feeling of lowness or depression. These effects resemble those of mercury, but they are not the same. The excoriation from the nitro-muriatic acid never reaches deeper than the cuticle: it never gives rise to foetid ulceration of any kind; nor does it produce the least offensive smell of the breath nor in the mouth. The effects of it in this way are surprisingly fugitive. At one hour the discharge of saliva may be excessive; the next it will stop, and perhaps suddenly come on again. The excoriations in the mouth generally go away in a day or two, if the remedy be discontinued, and appear no more. While the mouth in this way is affected by the acid, the teeth partake of uneasiness; but I never saw this in a considerable degree, nor have I

known any injury done to the teeth or their sockets. These last-mentioned effects are seldom met with to the extent that I have described, and need not be excited unless some peculiar circumstances require an unusual power, such as the symptoms of syphilis. I have lately added more and more of the muriatic acid in proportion to the nitric, and the effects have proportionally increased. I now make use of equal parts of the acids. Would not the greatest power of the remedy be obtained by those proportions that produce the greatest quantity of chlorine; for from that element I believe all its effects arise? I am yet ignorant what effects would be produced by the muriatic acid alone\*.

The nitro-muriatic acid appears in a particular manner to affect the glands, and to alter their secretions; and on this power a great part of its value in derangements of the liver seems to depend. It sometimes very suddenly increases the secretion of bile; and this effect may be kept up for a length of time. It increases the perspiration, and often to a great extent. Whether the nitro-muriatic acid be applied to the inner surface of the stomach, or to the external surface of the body, the effect

\* Since I wrote the above, some of my friends as well as myself have used for sponging the skin, chlorine dissolved in water, and with the same effects exactly as arise from the union of the acids.

is the same in kind, though not in degree. As a very general rule for its employment, it may be observed, that whenever the mercurial preparations are indicated, the nitro-muriatic acid will be found useful, with this difference, that in cases where mercury is highly injurious from delicacy or peculiarity of constitution, or from other causes, the nitro-muriatic acid may be employed with safety and advantage. On the other hand, I should not at present recommend it in acute diseases, with the exception of some kinds of fever, and of hepatitis of every character. Where the pulse is quick, and where there is an inflammatory tendency, I think it would be injurious.

I was first led to the use of the nitro-muriatic acid from an attention to the diseases of the liver. The derangements of that organ, and of its secretion, open a vast field for inquiry, which has been but imperfectly explored. I shall, as an example of the application of the nitro-muriatic acid, say a few words on this important subject.

#### *Acute and Chronic Hepatitis.*

With regard to acute hepatitis, if pure and unmixed, the propriety of employing the nitro-muriatic acid might admit of a doubt; but the same observation may be applied to mercury. I think, however, that I never met with a case of acute

hepatitis, that did not partake of the chronic affection, either at its commencement or soon afterwards. I know from experience that within the tropics, where I lived so long, a proper use of mercury is never to be neglected in either affection of that organ. I have not trusted to the acid where I thought the risk of abscess considerable; but without delay have employed mercurials, and every other means in my power to prevent, if possible, a termination so lamentable. I should now not hesitate to add this new power to the other means; and have no doubt, if really insufficient of itself, it would greatly aid us in affording security and relief.

Chronic hepatitis is a far more common disease, than the acute, but it may be considered as always partaking of the nature of both. One portion of the same liver is often insensible, enlarged, and inactive, while another part of it is suffering from all the symptoms of acute hepatitis, and going on to the formation of pus. It is this mixed disease that we meet with so generally in India, as well as in this country; and it is this state of the liver which gives rise to so great a variety of anomalous symptoms.

For this chronic affection, it appears to me, that the nitro-muriatic acid applied to the skin, is the most effectual and the safest remedy. A few hours, or even a single hour, will sometimes bring relief;

but it is necessary to continue the remedy till the system be sufficiently affected by it, and to repeat it *occasionally till the patient has recovered his usual degree of strength*. This is a rule in affections of the liver, of the utmost importance. A state of weakness, however produced, is the great remote cause of those chronic affections; so that we may remove the disease, but till the strength and vigour of the circulation be restored, we have no security against a return of it.

This affection of the liver produces a vast variety of diseases, to which various names have been assigned. To describe them well would require much time, and occupy many volumes. The process of digestion has an intimate connection with the bile; if this be depraved, the stomach and intestinal canal partake immediately of the disorder. The brain, which seems to be the source of feeling and motion, is connected by means of numerous nerves with those abdominal viscera, by which so many of the functions of life are carried on. A diseased state of the bile has a wonderful influence on the whole nervous system: it gives rise to pain and giddiness of the head: a great dislike to motion, and a sense of weakness, rather than actual weakness: cramps come on in the legs while asleep: the soles of the feet are tender and painful, and at times the sick rather drag them than raise them when they walk. A most able and intelligent friend, who was lately relieved very sud-

denly by the nitro-muriatic acid bath, from a state of long continued nervous irritation, is of opinion, that all the misery he had suffered for years arose from a depraved state of the biliary secretion. His observations on himself are curious and very important. He had long taken notice that the bile, though at times ample in quantity, was insoluble in water, and that the fæces had lost entirely the fecal odour. The solubility in water, with this peculiar odour, gradually returned from the use of the remedy, while at the same time the irritable state of the nervous system was suddenly corrected. But I think there is sufficient evidence that this acid in some cases acts directly on the nervous system; for in some people I have seen it very suddenly produce a sense of composure, of quiet and of happiness, and for days together they have been sensible of a degree of an agreeable intoxication.

There are other symptoms, though less obscure, perhaps, in their origin, that are often connected with the chronic affection of the liver. The blood cannot pass through it with the facility necessary to health, nor is it possible to relieve it effectually from such a state, but by giving solubility to the bilious matter. It then passes off abundantly through the proper channels into the duodenum. If from obstruction or enlargement the blood be prevented from circulating with ease in the liver, a general disorder of the whole frame becomes ap-

parent. The feet and ankles swell, and a fulness in the head comes on, with headache and giddiness, and a train of unhappy feelings. In this country it is a common practice to have recourse to the abstraction of blood by cupping, or by the lancet, in order to alleviate such symptoms. The first effect of this practice is, no doubt, occasionally to give relief to the head; but this is only temporary. An equal quantity of blood is again accumulated; a repetition of blood-letting is required; the state of weakness continues to increase; and the patient falls a victim at last to an injurious practice, derived from a theory altogether erroneous. It is not by letting off a part of the blood, that we can do any good; for it is neither too abundant in quantity, nor bad in quality. The fulness of the head, as well as of the feet, does really arise from the remora to the blood in another portion of its circuit; and in both extremities of the body it is produced by one and the same cause.

I need hardly say that melancholy and despondency of mind are often connected with a peculiar state of the bile, for this has been observed in all ages. This state of mind I have often seen removed by a proper use of nitro-muriatic bath; and people of both sexes have assured me that they think it had preserved them from the crime of suicide, to which, during the horrors of their feelings, they had an alarming tendency.



That state of the bile already mentioned, in which it seems to be deficient in quantity, and probably at the same time unhealthy in its nature, is very common. Of all hepatic affections, I think this attended with the most pain and distress of the bowels. This disorder of the biliary system frequently gives rise to a flux, which I have known to go on for many months, and even for years. I have generally seen a deficiency of bile without a tendency to flux, and often even accompanied by a constipated state of the primæ viæ. Such a condition of the liver and bile does frequently give rise to most uneasy derangements of the stomach; a tendency to acidity or heartburn; little ulcerations over the surface of the mouth and œsophagus, and perhaps extending downwards through the whole track of the intestinal canal. This aphthous disease is very distressing and dangerous, though I have been very successful in curing it by the nitro-muriatic acid. I know of no other remedy for this affection of the stomach and intestines, as the common means of cure seem to me to be very far from sufficient.

I may say with truth, that in such a condition of the liver and bile, all remedies that stimulate or excite the circulation are *injurious*. Among such I may reckon wine, spirits, bark, bitters, and steel. With such agents opium has been classed; but many of its effects are peculiar to itself, and a proper application of it in such complaints is often

of the utmost importance and utility. In almost every state and stage of diseased liver, opium may be given to many with benefit. Even in acute hepatitis it answers a salutary purpose when combined with calomel, or with the quicksilver pill: for, unlike what occurs in other inflammatory affections, it seems in those of the liver to be unattended by almost any ill effect. In chronic hepatitis, it alone is able to calm the irritability and unhappy feelings, and to allow time for the application of the means of cure. It seems, indeed, by its sedative power, to have a beneficial influence on the liver, and perhaps to do something more than produce a temporary calm. Opium, however, should never be given in chronic hepatitis, without great attention to its effect in diminishing the propulsive motions of the *primæ viæ*. I have been accustomed to give an opiate at bed-time, together with some laxative substance, such as the sulphate of magnesia, to correct its constipating effect.

It is proper to observe, that bilious people, and especially those who have been subject to intermittents, after finding the utmost relief from mercury, or the nitro-muriatic acid, and at the moment when we think they are advancing fast towards a perfect recovery, are apt, all at once, to say they are unwell; to lose their appetite, to become a little feverish, and to complain of their head. If these symptoms be neglected, the patient soon gets regular attacks of a quotidian fever, beginning with

a cold fit, and followed by the ordinary stages of that disease. Such is the connection which a great flow of bile, however excited, appears to have with fever of the intermittent kind \*.

Besides this fever, which is of the true intermittent kind, there is very generally a troublesome symptomatic fever, that plagues bilious people. It steals on imperceptibly, and, when once begun, gives rise, with little other inconvenience, to a state of most obstinate sleeplessness. This too may be obviated by an opiate, given before the hour of its accession; but it can be cured only by correcting the cause of it. Opiates with bilious people are very apt to occasion great itching of the skin, by delaying the passage of the bile through the bowels.

From a diseased state of the bile the memory is often affected, and a degree of stupidity, and even of idiotcy comes on. From this cause too, the hair at times grows harsh and hard to the feeling, and I have seen it, like the skin, become soft and

\* Although I have not seen this fever under a violent form, yet it is depressive and inconvenient. It is easily stopped by the Peruvian bark, taken daily in decoction, before the hour of the fit, and repeated at the same time for a few succeeding days. A common wine glass full of it, every two hours, and repeated for three or four times before the fever is expected, I have always found to be sufficient for curing it. With some people, I judge it prudent to give the bark decoction during the whole of the time they use the acid. It is often very useful to add a few drops of laudanum to each glassful of the bark decoction.

flexible from the use of the nitro-muriatic acid. In both cases I imagine that the effect arises from the long suppressed matter of perspiration being abundantly restored. To all these I may add, another inconvenient complaint from a bilious state : a frequent desire to pass the urine. Whether this irritation arise from a diseased sensibility of the whole nervous system, or from a morbid alteration in the urinary fluid, I do not know.

In all biliary derangements the rule is never to be forgotten, and I repeat it again, that *there is no security against a relapse, till the health and strength are fully restored ; and that till then, some repetitions of the remedy are necessary.*

The good effects of the nitro-muriatic practice can never be appreciated, until it has been discontinued for several weeks or rather months. During the use of the bathing or sponging, the pulse is often very quick, and patients grow thinner, even when they feel better. At times, too, they often complain of more than usual uneasiness in the liver, or in the region of it ; they often lose their flesh, and look very yellow. The remedy seems to alter and agitate that organ. The flow of bile, when once excited, goes on for a number of days ; and not, with some people, without inconvenience. If it do not affect the bowels as a laxative, it is highly necessary at this time to employ some substance that has this power, such as the sulphate of mag-

nesia, senna or aloes. In time, however, it is commonly found that the health, the strength, and the colour of the skin are much improved.

It is no small advantage of this practice, that we can apply the power in as high a degree as the strongest can bear, or in quantities so minute, that the most sensitive and nervous being can hardly be injured by it. I have immersed many to the chin in this bath, and I have been afraid, in other cases, to wet more than a single hand with the acid. The length of time, too, that the acid remains in contact with the skin, may be infinitely varied. We have thus a power extremely divisible, and applicable to almost every degree of resistance or sensibility.

When the acid produces very considerable effects, it is right, after a few days, to stop its use for a week or two ; as, if used long, it gives rise to unnecessary uneasiness from bilious discharges or bilious feelings. I have said that drinking the nitro-muriatic acid has the very same effects with its external use. When taken in this way, it should be very much diluted with water. Indeed it should taste but very slightly acid, and be drank in small portions at a time. I need hardly say, that it is very necessary to take care that, even in this weak state, it be not allowed to touch the teeth. The mouth should be immediately washed after swallowing it, and every precaution employed, that is

used with the mineral acids, to prevent injury from its external action. This way of using the nitro-muriatic acid is often very convenient and salutary, and in many cases may deserve a preference to any other. I think it is particularly applicable to some states of indigestion, and when we wish to produce effects gradually and insensibly.

On what principle to account for the singular agency of this compound acid on the skin, I confess myself in great doubt, or rather *in total ignorance*. That its power depends on chlorine, an elementary substance according to Sir Humphry Davy, there cannot be a doubt. The almost instantaneous effects that it produces on some people, its operation on the stomach, which it stimulates occasionally to contraction, and its suddenly causing a flow of bile, are all unlike a remedy that is conveyed by the known channels of absorption. In my opinion, the taste and the sensation that it occasions in the mouth, are exactly such as are produced by the galvanic fluid, and it would be presumptuous to affirm, that no agency of a similar kind has an influence in the effects of the nitro-muriatic acid. I can suppose that the effects of this remedy do not arise from the transfer of matter by any set of vessels; but that they are the consequence of peculiar motions, which it has the power of exciting in the solids, or the fluids of the body.

I need hardly, I hope, observe, that after the treatment which I have recommended for bilious people, as well as during the employment of the acids, a regular and rather abstemious system of diet should be adopted. I have always thought that food chiefly of a vegetable kind is the most salutary, and that great temperance in the use of wine, or other liquors containing alcohol, is absolutely necessary, if indeed they are to be allowed at all. I perfectly agree in every thing that Dr. Fordyce has said, with regard to the causes of the prevalence of bilious complaints in London. The sedentary occupations of many of its inhabitants, their eating great quantities of animal food and of butter, their use of porter, their living in close and hot apartments, deprived of exercise in the open air, with the sudden changes of a variable climate, are all powerful and sufficient causes of derangement of the liver, the stomach, and the other organs connected so intimately with the state of the bile.

It cannot be supposed that the experience of an individual is sufficient to ascertain the effects of a remedy, that is so widely applicable to medical practice as the nitro-muriatic acid. I have said that it is a substitute for mercury. In general its effects are equal to those of the mercurial oxides in the removal of disease, and in some cases I know that it possesses superior powers to any of them. I cannot give a better notion of the extent of its

application in medicine, than by comparing its salutary effects to those of mercury, while with common knowledge and discretion it can do but little harm. If used with the mercurial preparations, it seems to quicken their effect and increase their power.

From the commencement of my search for a substitute for the oxides of mercury, I congratulated myself on knowing the composition of the nitric acid, and I have had reason, in like manner, to be pleased with a similar knowledge of the substances still more compounded that I have employed with a like intention, and not without success. Although at present I have confined myself to some observations on a few of the derangements of the liver, and diseases of the bile, it must not be supposed that during so long a period, I have not ascertained its effects in many more of the maladies to which we are subject. Some account of this experience was long ago published both in India and in England.

*Russell Square, April, 1817.*

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P. S. Since I wrote the preceding paper, several of my friends have become convinced with me, that the very same effects arise from a diluted solution of chlorine in water, as are produced by the



nitro-muriatic acid. Our late experience puts an end to all doubt, if any could have existed, that chlorine alone is the source of the material effects. We have sponged the skin with a solution of chlorine in water, and in many cases, have obtained the same results as arise from a similar application of the nitro-muriatic acid. The solution of chlorine to which I allude, is water through which the *oximuriatic acid gas* has been made to pass, until it could retain no more of it. This mode of applying chlorine has the advantage of not irritating the most sensible skins so much as the diluted nitro-muriatic acid might do ; but even this solution I have diluted with about four times its bulk of water, before I applied it.

It is remarkable that the aqueous solution of chlorine, procured by mixing the acids together, is far less offensive than its solution got by the common means of passing the gas through water. Some degree of affinity seems in the first case still to subsist between it and the other elements of the acids, by which its sensible qualities are diminished to a certain extent. We are under great obligation to Sir Humphry Davy, for the light he has lately thrown on this subject, by which the effects of the *aqua regia* of the chemists are clearly accounted for.

I have of late received from different quarters, and from competent judges, a confirmation of the

opinions I had expressed of the effects of chlorine in derangements of the liver, and in syphilitic affections. As those opinions were derived from experience alone, I cannot but think that a future day will confirm them.

I am told that some others have been less successful than myself or my friends with this remedy, and that by the application of chlorine to the skin, they have been unable to produce a sensible effect of any kind. I can make no reply to such opinions, as I do not know how the trials on which they rest have been conducted; but I must affirm, that I have sooner or later been able to produce very distinct effects in almost every case in which I have employed it. Time will decide between us, but on one side of the question I need not say, there is a want of right observation.

If it be considered that the most active of all the mercurial preparations in use are calomel, (submuriate of mercury,) and corrosive sublimate, (oxymuriate of mercury,) we may ascribe this great activity to the chlorine of the composition. Why the sanative powers of the mercurial preparations were supposed to arise from the metal alone, I cannot conceive. In like manner the chemists for a long time neglected the water that might be mixed with the materials of their experiments, the elements of which water gave rise to effects that misled them in all their reasonings. I

**200 ON THE USE OF NITRO-MURIATIC ACID.**

am now nearly, I think, in a condition to shew what effects in the system arise from mercury as a metal, and what effects are derived from the other element of the mercurial preparations, whether this metal in them be combined with oxygen or with chlorine.

**June 3, 1817.**

**HISTORY OF A CASE**  
OF  
ILL CONDITIONED  
**ULCER OF THE TONGUE,**  
SUCCESSFULLY TREATED BY  
**ARSENIC.**

COMMUNICATED IN A LETTER FROM,

**CHARLES LANE, Esq.**

TO

**HENRY CLINE, Esq.**

PRESIDENT OF THE SOCIETY.

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*Read Jan. 21, 1817.*

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MY DEAR SIR,

*Arundel, Dec. 16, 1816.*

**Y**OU possibly may call to your recollection a case of ill conditioned ulcer of the tongue, in a gentleman whom I brought to you for your opinion in the year 1813; you deemed it at the time a very alarming case, and said that only two so formidable of the kind, had ever before fallen under your observation. The fortunate result of this case, and the very great and decided benefit derived from the use of arsenic in it, induced me to trouble you with the following account of its history.

Mr. G. B. aged 23, came to me in the month of June, 1813, with a very foul ulcer beneath the tongue; and said that he some time before had had one on the upper part of it, which he said was healed; but on examination, there was a deep, irregular fissure, with raised, jagged, hardened edges, communicating with the ulcer under the tongue; which on examining with a probe, I found not only communicated with the fissure on the upper surface, but the instrument passed through the substance of the tongue, into a deep-seated ulcer at the root of it, and thence into the throat. The general appearance of the disease was most alarming, bearing a very strong character of carcinoma.

A variety of means had been resorted to, without procuring the least alleviation of his sufferings, or producing any alteration in the state of the ulcer; he experienced great pain and difficulty in deglutition, and complained that the pain had of late extended behind the ears, to the back of the head and neck: mercury had been administered, but with evident bad effect; and the disease not only resisted every effort made to arrest its progress, but its baneful influence appeared to be extending itself to all the adjacent parts. The general health of the patient had sunk considerably; his pulse was small and tremulous; and he complained of excessive fatigue from the slightest exertion; his hand felt cold and clammy, and there existed a total want of energy in his whole system.

Under these circumstances I thought it a case in which arsenic might be administered with advantage; and I gave him ten minims of the solution every eight hours, gradually increasing the dose until he had experienced some sensible effect from it; and seventeen minims was the largest dose his stomach would at any time bear—the ulcer was injected twice a day, with a lotion containing a small portion of the solution in it, and I desired him to live on a light vegetable and farinaceous diet, with milk, and to abstain from wine, spirits, and fermented liquors; his bowels were regulated by means of small doses of magnes. sulphas.

The ulcer in about ten days put on a more favourable aspect, and at the end of a month it appeared perfectly healed. Mr. B.'s health being now greatly amended, he indulged himself in taking very strong exercise; nor did he any longer restrict himself in his mode of living; and at the termination of some weeks the ulcer again made its appearance, and again yielded in about three weeks to the same mode of treatment. Not deterred by what had before occurred to him, he again became intemperate in his use of exercise, and careless in his manner of living; and at the latter end of the month of September, the disease returned with all its train of horrid symptoms, very greatly aggravated: at this time business calling me to town, I requested him to take the oppor-

tunity of consulting you ; but before we commenced our journey I emptied his bowels well with *magnes. sulphas.*, and once again desired him to have recourse to the *solut. arsenici* ; and although he had taken it but four days, when I had the pleasure of seeing you, which was on the 1st of October, 1813, the ulcers had evidently assumed a much better appearance ; and you desired him to continue the use of the solution, taking at the same time, a drachm of *pulv. sarsaparillæ* twice a day ; you likewise enjoined a most strict attention to that kind of diet which I ordered in the first instance ; and impressed on his mind, the absolute necessity of persisting in it, for a very considerable time after the ulcers should again heal. He took the solution in doses of seventeen minims every eight hours for three weeks ; the ulcers again healed, and he continued taking the solution for ten days after they were well. He complained at this time of great languour and debility ; his pulse was small, feeble, and very quick ; I prescribed for him two ounces of the *mist. ferri comp.* to be taken twice a day, which he continued taking for a considerable time with the most decided good effect ; and I am happy to report, that this most alarming disease had at last yielded to the treatment he had now steadily pursued, and he has continued to enjoy an uninterrupted state of good health unto the present time.

I delayed troubling you with this statement, that I might have an opportunity of ascertaining the

permanency of the cure; and as more than three years have elapsed since the ulcers had healed, I think I may safely calculate on the disease being perfectly subdued.

With every sentiment of esteem and respect, allow me, dear Sir, to subscribe myself,

Your most obliged and faithful,

CHARLES LANE.

To HENRY CLINE, Esq.



**HISTORY OF A CASE**  
**OF**  
**LITHOTOMY,**  
**WITH A FEW REMARKS**  
**ON THE**  
**BEST MODE OF MAKING THE INCISION**  
**IN THE**  
**LATERAL OPERATION.**

**By SAMUEL COOPER, Esq.**  
**SURGEON TO THE FORCES.**

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*Read April 29, 1817.*

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**O**F all the great operations in surgery, lithotomy is perhaps that, in which great awkwardness, mortifying failures, and dangerous blunders, are most frequently observed. Many a surgeon, who contrives to cut off limbs, extirpate large tumors, and even tie aneurismal arteries, with *éclat*, cannot get through the business of taking a stone out of the bladder, in a decent, much less a masterly style. This fact is so familiarly known in the profession, and its truth so often exemplified, that I may well be excused the unpleasant task of relating, in proof of it, all the disasters, which have come to my own personal knowledge. But I must

take the liberty of remarking, that, in this branch of surgery, a great number of individuals do not profit by these instructive lessons of experience. It is true, the more they see of lithotomy, the more they are convinced of its dangers ; yet, too often, instead of studying the causes of ill success, they merely derive, from the examples before them, a suspicion of the unskilfulness of the operator, or some discouraging conjectures about the difficulties of the operation.

The establishment of certain principles, to be observed in lithotomy, appears the most probable way of diminishing the frequency of the accidents and failures of this common operation. If these principles are not violated, the kind of treatment employed is but a secondary consideration, and the surgeon may do nearly the same thing with an ordinary dissecting knife, a concealed bistoury, a beaked scalpel, or a well-made gorget.

In the present paper, I propose to recite a case of lithotomy, which was attended with some particularity, and then offer a few general observations on the proper direction and size of the incision. These points are far from being settled, as must be plain to every body, who recollects, that Mr. John Bell recommends a free opening ; Scarpa, a small one ; that Mr. Abernethy and Scarpa prefer gorgets, which cut upwards and outwards, either at an angle of  $45^{\circ}$  or  $69^{\circ}$  from the axis of the urethra ;

and lastly, that the gorgets of Desault, Mr. Cline, and most other surgeons, are constructed for cutting, either directly outwards, or outwards and downwards.

When I was in charge of the military hospital at Oudenbosch, in Holland, in the spring of 1814, Serjeant Ryan, of the 1st Foreign Veteran Battalion, desired me to see his little boy, about four years old, whose complaints made me immediately suspect a stone in the bladder. As I had no sound, I introduced a small silver catheter, with which a calculus was distinctly felt. Without taking the instrument out of the urethra again, I determined to perform lithotomy with a common dissecting knife. Indeed, no other mode could be adopted, as we had neither a staff, a gorget, large forceps, nor lithotomy instruments of any kind. After making the external incision in the usual way, and dividing the membranous part of the urethra, I dissected along the side of the catheter, until the prostate gland, and a small portion of the bladder beyond it, could be plainly felt with the fore-finger of my left hand. In this step of the operation, the edge of the knife was constantly directed inwards and upwards. The catheter was then withdrawn, as its very small size, and round shape without any groove, made it impossible for me to derive any further assistance from it. The prostate gland now served as my guide in the completion of the internal part of the incision. With the edge

of the knife, therefore, directed inwards and upwards, I cut into the bladder behind the base of the prostate gland; and carrying the incision forwards, under the direction of my left fore-finger, I made the requisite division of the neck of the bladder, and upper part of the side of that gland. With a small pair of ordinary dressing forceps, a roundish stone about an inch and a quarter in diameter was readily extracted.

This operation was done at the hospital, in the presence of Dr. Shanks, of the 56th regiment, and several other medical officers. No unfortunate symptoms followed, notwithstanding the child was put into a baggage cart two days afterwards, and conveyed in this manner in the rear of the regiment, a march of two or three days. Such premature disturbance, however, and the totally neglected state of the little patient, for nearly ten days, made the wound longer in healing than usual.

The preceding case is related, not with any view of persuading future operators to adopt exactly the plan, which the want of a staff obliged me to follow; for, if this instrument had been at hand, I certainly should not have withdrawn it before the completion of the internal incision; but, having turned its convexity outwards and downwards, I would have cut inwards and upwards, into its groove. Thus, I conceive, the neck of the

bladder and side of the prostate gland, might have been divided with greater convenience and safety.

My principal design is to bring to the recollection of surgeons the several advantages of making the incision through the whole of the parts cut in lithotomy, in a straight, regular, direct manner, from the surface of the skin in the perineum, to the termination of the wound in the urethra and bladder. In an adult subject, the external wound should commence about an inch above the anus. The impropriety of beginning it higher up has been duly insisted upon by Sharp, Bertrandi\*, Callisen†, and every good writer on the operation; yet, extraordinary as it may seem, this is one of the most common faults still committed by modern surgeons. The incision in the integuments is to be ample, that is to say, at least between three and four inches in length; because a free opening in the skin is not only exempt from

\* "Il ne faut couper l'urètre que le moins qu'on peut, parcequ'on obtient par ce moyen une meilleure voie pour pénétrer dans la vessie sous l'angle du pubis. C'est avec raison que Sharp dit que l'incision de l'urètre faite au dessus de cet angle est si peu utile pour l'extraction de la pierre, qu'on n'en retireroit pas plus d'avantage en le coupant presque dans toute sa longueur." *Traité des Opérations*, p. 127.

† "Ut hæ partes haud sectione attingantur, quæ pro calculi egressu nihil faciunt; adeoque bulbus urethræ et hujus pars corpore spongioso circumdata intacta relinquantur." *Systema Chirurgiæ Hodiernæ*; pars posterior, p. 665.

danger, but attended with considerable advantages, especially those of facilitating the other steps of the operation, and preventing afterwards any lodgment and effusion of urine. The external wound ought to be directed towards a point situated a very little towards the anus, from the innermost projection of the tuberosity of the ischium. From the line thus made, the incision should be carried inwards and upwards, through all the parts between it and the side of the prostate gland. Another line, extending from the inferior angle of the wound, to the termination of the cut in the bladder, forms the precise limits, to which the depth of the incisions should reach, and no further.

The great principle of making the axis of the wound as straight and direct as possible should always be kept in view, whether the surgeon employ a common scalpel, which cuts into the bladder from without inwards, or other instruments, which divide the prostate gland and neck of the bladder, from within outwards, like the *bistoiré caché*, beaked knives, and every kind of cutting gorget. In the latter circumstance, the only difference consists in cutting, from the bladder and urethra, downwards and outwards, towards a point, situated a little way from the tuberosity of the ischium, towards the anus, instead of carrying the incision from this point, upwards and inwards, through the upper part of the side of the prostate gland, and orifice of the bladder.

The following may be enumerated as important advantages from attending to the foregoing principle.

1. The wound is made in a direction which affords the greatest room for the extraction of large stones; and the axis of the incision being also as nearly straight as possible, the introduction of the forceps, and the passage of the calculus outwards, are materially facilitated.

That these are important advantages, I think every surgeon will allow, who knows how much of the pain and danger of lithotomy depends upon the injury, which the parts suffer from the violence used in drawing out the stone\*, and the repeated introduction of the forceps. Larger stones may likewise be thus extracted, than in any other way

\* Cheselden, the most successful lithotomist England ever produced, made the incision in the direction here recommended,—sometimes inwards and upwards; sometimes outwards and downwards. The following remarks of another distinguished surgeon merit particular attention. “J’ai vu plusieurs fois dans les Hôpitaux de Paris, que les chirurgiens, coupant trop en haut vers l’angle du pubis sentoient une grande résistance au périnée, quand ils vouloient retirer le calcul avec les tenettes; on voyoit le périnée se tuméfier par la pression, qu’y faisoit la pierre; en ce cas, quelques opérateurs plus sages abandonnoient la pierre, introduisoient de nouveau le gorgeret, et en tournant en dessous la cannelure de celui-ci, prolongeoient l’incision obliquement vers la tubérosité de l’os ischion; et enfin à la faveur de cette plus grande ouverture, retiroient la pierre sans cause de déchiremens.” *Bertrandi, Traité des Opérations, p. 133.*

of making the lateral incision, as must be obvious to every practitioner, who reflects for a moment upon the very limited room afforded at the upper part of the triangular space, between the arch of the pubis, the ramus of the ischium, and the neck of the bladder. This consideration cannot fail to have great weight with all surgeons, who feel duly convinced, how unsatisfactory a method it is to break a calculus, in order to get it out of the bladder. The measures necessary for the removal of all the fragments protract the completion of the operation, and seriously increase its danger ; while the continuance of a single fragment of the stone behind, may cause a renewal of all the grievances, for the cure of which, the patient submitted to the operation.

2. The *arteria pudica profunda* can never be injured, because the surgeon does not let the knife, or other instrument made use of, cut in a direction which would bring it into contact with the inside of the tuberosity, or ramus of the ischium, where that vessel is situated.

3. The rectum will not be wounded, because the direction of the incision, either downwards and outwards, to a point situated a little way from the tuberosity of the ischium towards the anus, or from that point inwards and upwards, sufficiently removes the knife from the intestine. But no surgeon should be unmindful, that, when the rectum



for a small incision are promulgating the worst advice, which can be offered to the lithotomist. My own observations decidedly tend to these conclusions, as will be presently explained.

The Tract\* recently published by Scarpa, has for its main objects the recommendation of a modification of Hawkins's gorget, and the inculcation of the propriety of making a small limited incision in the prostate gland, without cutting any part of the bladder. As sufficient room cannot thus be obtained, for the extraction of even a stone of moderate size, he is an advocate for the gradual dilatation of the urethra and orifice of the bladder. He maintains, that the lateral operation, though executed with the greatest precision, does not exempt the surgeon from dilating in a certain degree, the orifice of the bladder and cervix of the urethra, the dilatation of those parts, however moderate, being always necessary even where the calculus is of middling size. He states, that, in an adult, the orifice of the bladder dilates almost spontaneously to the diameter of five lines; and he adds, that the lateral incision, within proper limits, divides the body and base of the prostate gland to the depth of four, or at most five lines, forming with the five, to which the orifice of the bladder natu-

\* Memoir on the cutting gorget of Hawkins, &c. translated by Briggs.

rally yields, an aperture of ten lines. But, observes Scarpa, in an adult, a stone of ordinary size and oval figure, is sixteen lines in the small diameter, to which must be added the thickness of the blades of the forceps: consequently, even after the incision has been made with the most scrupulous exactness, the stone, though of moderate size, cannot pass out of the bladder, unless the dilatation of the base of the gland and orifice of the bladder be carried to the extent of nearly eight lines, beyond the size of the aperture made with the knife. But, says Scarpa, if in order to avoid distending the parts to the extent of eight lines, the base of the prostate gland, together with the orifice of the bladder and a part of its fundus, be divided to a depth equivalent to it, *the event would necessarily be an effusion of urine into the cellular membrane, between the rectum and bladder, and consequently suppuration, gangrene, fistulæ, and other serious evils.* (pages 4 and 5.)

According to Scarpa, the apex of the prostate gland forms the greatest resistance to the introduction of the forceps, and the extraction of the stone, and therefore ought to be completely divided (p. 7.); but, he contends, that two, and sometimes three, lines of the substance of the base of the gland, should be left undivided; which, he asserts, is a matter of great importance, because the untouched portion, around the orifice of the bladder, prevents

the effusion of urinae, and the formation of gangrene, or fistulæ, between that viscous and the rectum. (page 22.)

After this statement of Scarpa's sentiments, respecting one of the most interesting points of the lateral operation, a question or two naturally arise. Are we then to conclude, that the plan of making a free and direct incision into the bladder, ought to be abandoned? Must we forget, that it was this method which answered so well in the hands of the several renowned lithotomists already enumerated? And must we believe, that the advice delivered upon this subject by Bertrandi, Desault, Mr. John Bell, and all the best modern surgeons in this country, is founded only upon a capricious partiality to the free use of cutting instruments? Earnestly as I respect the names of men, who have signalized themselves so much as Callisen and Scarpa, their authority can only influence me, inasmuch as I find it coincide with the dictates of experience, the great arbitrator of every disputed point in practice.

We have seen, that an apprehension of effusion of urine, gangrene, fistulæ, &c. is the only reason assigned by Scarpa for his aversion to making a complete division of the side of the prostate gland, and orifice of the bladder. But, I would inquire, do we find extravasation of the urine, between the

rectum and bladder, and gangrene and fistulæ, so frequent after lithotomy in England, as to render it probable, that these ill consequences can ever proceed from our usual mode of dividing completely not only the side of the prostate gland, but also the adjoining part of the bladder? Are those bad effects so often experienced in this country, as to constitute a material source of uneasiness in the mind of a surgeon about to undertake lithotomy? Do they form a substantial reason for abandoning the maxim of always endeavouring, as far as circumstances will allow, to make an incision of sufficient size for the easy removal of the calculus? And would not Scarpa's method of stretching and dilating the wound, in order to get the stone out of the bladder, often dangerously prolong the operation; lead to much mischief from the repeated use of the forceps; cause serious contusion and laceration of the parts; and, for all these reasons, increase the chance of inflammation of the bladder and peritoneum? It is this inflammation which destroys more than nine-tenths of the patients, who perish after lithotomy; and it appears to me, that the apprehension of it, from the consequences of making a small opening, is much better founded, than the fear of fistulæ, &c. from practising a large one.

In the course of the nineteen years that I have been in the profession of surgery, I have seen the

lateral operation performed more than fifty times, either with various kinds of gorgets, beaked knives, the *lithotome caché*, or common scalpels. In all these examples, the avowed intention of the surgeon was to make a free opening into the bladder. I do not mean to say, however, that this was always actually effected, since the bad construction of some of the instruments employed, and other causes, sometimes frustrated the wise design of the operator. But what was the consequence? Generally speaking, those surgeons who made only a small incision into the bladder, and kept their patients a long while upon the operating table, before they succeeded in getting out the stone, by the repeated and violent use of the forceps, had the mortification to see very few of their patients recover, a large proportion being carried off by peritonitis, on the third or fourth day after the operation.

On the contrary, when the incision was ample and direct, so that the calculus could be easily and gently removed, the patients were almost invariably saved.

It merits particular notice, that, of late years, gorgets have been less employed than formerly, in one of the principal hospitals\* of this metropolis, scalpels and beaked knives having been preferred,

\* Saint Bartholomew's.

and that since this beneficial change in practice, fewer patients have been lost there by peritonitis. This fact serves as a material confirmation of all that I have urged in the foregoing pages ; because, the common fault of gorgets, particularly of those used some years ago, was to make too small an opening, and this sometimes not in the best direction. But, when a common scalpel, or beaked knife was preferred, the surgeon generally made the incision in the prostate gland and neck of the bladder, large enough for the easy passage of the stone, and always downwards and outwards in the most advantageous direction.

With respect to the degree of importance which ought to be attached to the fear of effusion of urine between the bladder and rectum, gangrene, fistulæ, &c. I can only repeat, that they are inconveniences, which are not commonly observed after lithotomy in this country. In two or three instances only, I have known the urine come through the wound longer than usual ; but even these cases ended well. As for the extravasation of urine and sloughing, although there cannot be a doubt of their occasional occurrence, they cannot be fairly imputed to the method of operating in England, since they have not taken place after any of the numerous operations, with the results of which I have been acquainted.

All these facts and considerations, therefore, incline me to doubt, whether the apprehension of effusion of urine, fistulæ, &c. be sufficiently serious and well founded to render it adviseable for surgeons to relinquish the plan of making a complete division of the side of the prostate gland, and part of the bladder in the operation of lithotomy. Nor is it at all clear to my mind, that effusion of urine and sloughing are likely to be the effect of practising a free opening. Indeed, when they do happen, I suspect that they generally proceed from a totally different cause, *viz.* from the incision in the skin being too small and too high up, and from the axis of the internal part of the incision not corresponding with that of the external wound. Hence, the urine does not readily find its way outward, and some of it passes into the neighbouring cellular membrane\*.

\* In noticing the faults of Hawkins's gorget, Desault has observed: "La methode de l'enfoncer horizontalement dans la vessie sur le cathéter tenu à angle droit avec le corps, a deux grands désavantages: d'un côté celui de pénétrer par l'endroit le plus rétréci du pubis, et par conséquent de ne faire que difficilement une ouverture suffisante; d'un autre côté, celui de ne pas établir de parallélisme entre l'incision extérieure des tégumens qui est oblique, et celle du col de la vessie et de la prostate qui se trouve alors horizontale. De-là la possibilité des infiltrations par les obstacles que les urines trouveront à s'écouler."

I have also no doubt, that some of the worst instances of extravasations of urine after lithotomy, have been owing to another cause, pointed out by the same excellent surgeon.

"Imprudemment

“Imprudemment porté dans la vessie, le gorgeret peut aller, par le stylet beaucoup trop long qui le termine, heurter, déchirer, perforer même la membrane de la vessie, et donner lieu à des infiltrations d’autant plus dangereuses, que le lieu d’où elles partent est plus inaccessible.” (See *Œuvres Chirurgicales de Desault*, par Bichat, Tom. II. p. 460-461.



**CASE**  
**OF A**  
**FATAL HÆMORRHAGE**

**FROM THE EXTRACTION OF A TOOTH.**

**By RICHARD BLAGDEN, Esq.**

**SURGEON EXTRAORDINARY TO HIS ROYAL HIGHNESS THE  
DUKE OF KENT.**

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*Read Dec. 24, 1816.*

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**J**OSEPH LANCTON, while a boy, had a tooth extracted, in consequence of which an alarming hæmorrhage took place from the alveolus. The hæmorrhage continued twenty-one days and then ceased. It was observed afterwards, that whenever he cut himself accidentally, or received any other slight wound, hæmorrhage took place to a greater extent than in ordinary persons, and that it was more difficult to stop. In the summer of 1815, being then twenty-six years of age, he received a slight wound on the forehead. A profuse hæmorrhage took place from a wounded artery. Pressure and the ordinary styptics were employed for the purpose of suppressing it, but the bleeding constantly recurred. Mr. Gatcombe, who took

charge of the case, applied a ligature round each of the divided ends of the bleeding vessel, but it gave way behind the ligatures and the bleeding returned. Mr. Gatcombe observed the artery to be very thin in its coats, like a vein rather than an artery. The hæmorrhage was eventually stopped by the application of the kali purum, which produced an extensive slough of the soft parts, and even caused an exfoliation of a small portion of bone. In the spring of 1816 he suffered much from a caries of the second molaris of the upper jaw on the left side. Fearing that the extraction of it would occasion an hæmorrhage, such as had occurred formerly, he for a considerable time delayed having the tooth removed. At length, as he continued to suffer, he determined to submit to the operation, and the tooth was therefore extracted on the 30th of June. The jaw sustained no particular injury by the operation, but there was an abscess at the root of the tooth, which either was in, or communicated with, the maxillary sinus. A profuse hæmorrhage immediately took place from the alveolus. On the evening of the 1st July, as the bleeding still continued, I was desired to see him, and immediately applied the lunar caustic to the bottom of the alveolus, but without effect. I then carefully stopped the socket with sponge soaked in a solution of blue vitriol, and directed that the face should be kept moist with some cold application. The bleeding now ceased but returned in a few hours. On the following

morning the bleeding was still profuse, and continued so through the whole day, although the socket was again plugged with the greatest care and attention. On the morning of the 4th of July, Mr. Brodie was consulted, and applied the cautery to the alveolus, which immediately restrained the hæmorrhage, and the bleeding did not recur for six hours, but in the evening it returned as violent as before. I again stopped the alveolus but without success; the cautery was repeated twice, but the bleeding continued notwithstanding. In applying the cautery a large quantity of matter escaped apparently from the maxillary sinus. On the following morning, July 5th, the bleeding still continued; the patient had never fainted, but he became now very low and depressed; his situation altogether was very alarming, and it became necessary to make some further attempt to restrain the flow of blood. The bleeding vessel was evidently out of the reach of surgery. The nearest and the only vessel to which it was possible to apply a ligature, was the trunk of the carotid; and as a ligature on this artery does not seem to be attended with any particular risk, and as the risk of allowing the hæmorrhage to continue was very great, it was determined that the carotid should be tied. Mr. Brodie performed the operation about ten A.M. As the ligature of the carotid produces a cure not only of the common aneurism, but of the aneurism from anastomosis, which is a disease of the smaller arteries, it was fully expected that it would stop the

bleeding in this instance ; but in this expectation we were disappointed. The hæmorrhage still continued. The wound made in the operation bled very little at first, but in the course of a few minutes after the operation it began to bleed profusely. No single vessel could be observed bleeding, but there was a general oozing from its surface. Ice was applied to the wound, and while this was continued the bleeding from it was suppressed, but it returned immediately on the ice being removed. Ice was also applied to the left side of the face, and there was reason to believe that it stopped the bleeding for a few hours ; however the hæmorrhage afterwards returned, and the patient died at five A.M. on the Sunday morning July 7th, a week from the time of the removal of the tooth.

After death the trunk of the carotid was examined. It was found to be of its natural texture, except that there were several opaque, white depositions on the outer surface of its inner coat, such as precede ossification. The temporal and some other branches of the external carotid were also examined ; their coats appeared to be thinner than usual, and nearly transparent.

# **RUPTURE OF THE STOMACH,**

AND

**ESCAPE OF ITS CONTENTS,**

INTO THE

**CAVITY OF THE ABDOMEN.**

**By JOHN CRAMPTON, M.D.**

**KING'S PROFESSOR OF MATERIA MEDICA, AND ASSISTANT PHYSICIAN TO  
STEEVEN'S HOSPITAL, DUBLIN.**

COMMUNICATED BY

**DR. BAILLIE.**

WITH

**ADDITIONAL OBSERVATIONS**

**By BENJAMIN TRAVERS, Esq. F.R.S.**

**SURGEON TO SAINT THOMAS'S HOSPITAL, AND VICE-PRESIDENT OF  
THE SOCIETY.**

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*Read Nov. 12, 1816.*

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**A**T three o'clock in the afternoon, October 19, 1816, Miss H. of a sallow complexion, spare habit, aged twenty-nine, was seized with a spasm, as she called it, in the stomach, which threatened immediate dissolution. She had been subject occasionally to pain in that viscus, as well as in both the hypochondria, but they generally gave way to medical treatment of a few days.

At five o'clock, when I saw her, she suffered agonizing pains in the whole abdomen ; they seemed to originate from the scrobiculus cordis as a centre, and shot to the hypochondrium, to the back and even to the shoulders. The belly was hard, the abdominal muscles being strongly contracted, but not tumid ; pulse not hurried ; tongue clean ; bowels slow for two days ; had ate her breakfast as usual, and taken oatmeal porridge for luncheon ; she had no nausea or disposition to vomit, but she was anxious to take an emetic, to which I did not consent.

At seven o'clock, her pulse was 100 ; the skin hot ; the pains were still more urgent.

At ten o'clock, the pulse was 120 ; much smaller ; breathing quick ; shortly after this the capillary circulation seemed to fail.

At twelve o'clock, the pulse could scarcely be felt ; the hands, feet, and knees were cold ; the face livid ; the breathing more embarrassed. Although her dissolution was evidently approaching, there was not the least remission of pain. She moaned incessantly ; her respiration became gradually shorter ; her extremities colder ; her stomach never rejecting either drink or medicine ; retaining her senses and intellect perfect to the last. She gradually sunk, and expired in agony, at three o'clock in the morning.

It is unnecessary to detail the medical treatment; suffice it to say, that bleeding, both general and local, fomentations, mild purgatives, glysters in the usual form, besides those administered from a large syringe, blisters and the warm bath, were all resorted to without delay, and pushed to their fullest extent; they made no impression on the disease, nor did an opiate given when recovery seemed out of the question, afford any respite from pain.

An examination of the body was obtained the ensuing day, thirty-six hours after death, when the following appearances presented themselves.

On opening the abdomen, the stomach was observed to be pale, flaccid, and empty, its contents, amongst which were recognized oatmeal and castor oil, had escaped into the cavity of the abdomen, through a round aperture situated on its anterior surface, at the union of the cardiac and pyloric portions. This perforation of the stomach was perfectly circular, about the size of a pea, and appeared to be the result of an ulcer on the mucous surface, which had gradually penetrated the other coats. This ulcer was hollow and circular, nearly the size of a shilling, and had the appearance as if it had been made with caustic, with the orifice in its centre.

There were extensive  
 matation through

the intestines, which appeared as if injected, and exsudations of lymph, which connected the convolutions of the intestines to each other by adhesion. The liver and spleen appeared shrunk and flaccid, not indurated; the gall-bladder contained some yellow bile; the urinary bladder appeared empty and contracted.

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## ADDITIONAL OBSERVATIONS

By BENJAMIN TRAVERS, Esq. F.R.S.

AND VICE-PRESIDENT OF THE SOCIETY.

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The case of an aperture formed in consequence of an ulcer of the mucous coat, in the stomach and intestines, and giving issue to their contents, although not of very frequent occurrence, has been recorded by several anatomists. I have added a case strikingly similar to that related by Dr. Crampton, which occurred under my observation some years ago, and a communication or two from a friend, with a few remarks; not with an idea of affording a practical suggestion in a case which sets all art at defiance, but for the purpose of further illustrating the subject.



*CASE I.*

Mr. —, aged thirty-five, of a strumous habit, but enjoying generally good health, was seized whilst dining in company, with an excruciating pain in the abdomen, which he described as unlike any he had ever felt. The principal seat of his pain, which never remitted, was the region of the navel, and it was described as occasionally shooting from this part as from a centre over his whole body, and especially affecting his neck and shoulders. His abdomen was tense and hard; his respiration somewhat agitated; his pulse little, if at all affected. Flatus rose in quantity from his stomach, but he had no disposition to vomit. At midnight, the medicine, which he had taken soon after the attack, had not operated: he was exceedingly restless, unable to bear the slightest pressure of the hand upon the abdomen, and earnestly prayed to be relieved from his intolerable anguish by death. He often called for a spoonful of gruel, which in part returned, as if deglutition was interrupted by a spasm of the œsophagus. At three A.M. the pain was not mitigated; the pulse was quick, small and fluttering. His intellect remained clear and perfect, but his strength was rapidly exhausting; his extremities became cold, and he died in the warm bath at six A.M. about thirteen hours from the attack of pain.

I pass over the formalities of medical treatment : suffice it to say, that all the obvious means of relief were perseveringly employed without any sensible effect.

*Inspection of the Body.*

The peritoneum was universally inflamed ; recent adhesions attached the contiguous folds of the intestines to each other ; a large quantity of fluid deeply tinged with bile was contained in the pelvis ; and about a finger's breadth below the pylorus appeared a circular foramen, having a peritoneal margin, of the diameter of a writing pen. It proved to be the centre of an irregular superficial ulcer of the mucous coat, including in its extent two-thirds of the ring of the pylorus. There was no other appearance of ulceration in the intestinal canal.

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*CASE II.*

Mr. —, aged about thirty, healthy, but of dissipated habits, was seized with pain in the abdomen, while singing a song in a jovial company after dinner ; he was carried home and lived between two and three days in great and increasing suffering. Upon inspection an extravasation of the alimentary matters, mixed with the product of an acute

and extensive inflammation, appeared in the peritoneal cavity, and it was discovered that the former had issued from an opening of the small intestine, which was ulcerated upon its internal surface for some space around the opening. The gentleman to whom I am indebted for these particulars, was present at the examination, but had not attended the unfortunate subject of it, and having no minutes in writing of the case, which occurred several years ago, he could not enter into further detail.

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### CASE III.

Occurred in the practice of Dr. Farre.

Mills, a hair-dresser, had occasionally for the seven preceding years suffered sudden and very violent attacks of abdominal pain, from which he had always been speedily relieved by a wine glassful of brandy. On the day of the fatal attack, he had endured the pain without interruption, attending to his business, and in the evening went to market to buy fish for his supper. On his return the pain became intolerable, and he took the usual dose of brandy, but did not obtain from it the expected relief; he sat in a bent posture, with a sunk-en countenance expressive of much agony. Now and then he vomited. He dreaded going up stairs, but at length, making a desperate effort, he ran up,

and fell as he entered his room. It was evident that he was inflamed at this time, and the brandy appears to have aggravated the symptoms. He died in thirty-six hours from the commencement of acute pain; every part of the peritoneum was inflamed; a circular aperture of the peritoneum large enough to admit a crow's quill was found at the junction of the duodenum and stomach. It was the centre of an ulcer that had destroyed the villous and muscular coats of the bowel to the extent of half an inch. Coagulable lymph was effused about the pylorus, but not in quantity sufficient to produce an adhesion of the adjoining parts, so as to exclude the aperture from the cavity of the peritoneum. The margin of the aperture was deeply tinged with bile, yet the contents of the peritoneum had only the appearance common to matters effused from inflamed serous membrane. Although the unhappy man had provided himself with food, it did not appear that he had taken any; but it is probable the peritoneal sac had been injected with brandy.

A case of fatal inflammation of the abdomen, complicated with encysted tumor of the ovary, in which an aperture was formed at the centre of an ulcer in the mucous coat of the stomach, is related by Morgagni. The dissector finding only a little serum in the lower part of the pelvis, doubted the opening had not been made in dis-

section. Upon which Morgagni offers the following satisfactory observation.

“ Although I thought it but little probable, if the stomach had really been cut by the knife accidentally, that this should have happened in that part in particular, which corresponded to the middle of the ulcer, nor did the figure and magnitude of the foramen, which was almost capable of admitting a little finger, seem to be of such a kind, that they could be referred to the point or edge of the knife; yet that I might satisfy both him and myself, I examined with accuracy a second and a third time, the edges of the ulcer, and when I saw them to be not only callous but unequal \*, and the more the foramen went towards the outside, to be comprehended in the less circumference, which two circumstances the knife could not certainly have been the cause of, by having cut from without inwards, I judged that the aperture was not to be attributed to the knife, but to disease †.

The presence of effused matters has not always been ascertained to the satisfaction of the examiners of these cases. But although the quantity

\* I think it probable from the description of this ulcer and of the disease of other parts, that the examiner had unknowingly detached it from an adjacent surface of adhesion, and that in fact no effusion had taken place.

† Alexander's translation, Letter XXIX. Art. 16.

and quality of effused fluids may vary according to the site and size of the aperture, and the state of the stomach, whether distended or corrugated, at and after the period of its formation, there is so little reason to doubt that effusion is a consequence, direct or indirect, of an undefended opening formed in the centre of an erosion of the mucous coat, that it is much more probable that the extravasation should have been overlooked, or, being blended with the fluid poured out by the inflamed vessels, should have been undistinguishable, than that it should not have occurred.

When upon examination of the acutely inflamed abdomen a preternatural aperture is met with in the stomach or intestines, it would be going strangely out of the way to combat the evidence of our senses, were we to attribute the inflammation to any other cause, than the escape into the abdomen of their proper contents. Death has not unfrequently been known to follow a rupture of the healthy stomach.

A tumbling boy, in performing one of the unnatural contortions of his body, was seized with acute pain in the belly, and in a few hours died in excruciating agony. The stomach was found ruptured in the middle, and a quantity of gin with fragments of apples were extravasated in the peritoneal sac.

"When," says Morgagni, "there has been an effusion of the contents of the stomach into the belly, I see that either a very speedy death was the consequence, or at least that *frequently* it was not delayed more than a very few days, if we reckon the days of the perforation from the day of the disease becoming very violent, as it happened in an observation, &c. wherein death did not follow till the eighth day, the foramen being in the upper and interior part of the stomach, so that it would have been very difficult for any thing that was drunk to be extravasated into the belly, unless after some time, and in particular motions of the body\*." He subjoins that he uses the qualifying word "*frequently*," because he is aware that there are cases which convey a different impression.

The exasperation of the symptoms, I would observe, is no otherwise a sign of the perforation having taken place, than as it is a sign of effusion; so that we must suppose, to take Morgagni's criterion, that the stomach had discharged more or less of its contents into the belly, eight days before the termination of the inflammation by the patient's death, a supposition, to say the least of it, in the highest degree improbable.

Numerous and extensive ulcers from dysentery, scrofulous affections of the mucous glands and of

\* Loco citato.

the mesenteric, as tubercles running into abscess, &c. are met with in the dissection of morbid bodies, from which the fæculent matters have freely escaped into the abdomen. I have published three cases of this description in my work on Injuries of the Intestines. There is, in these cases, a very marked difference from those before related, in the appearance of the openings. In the first, the orifice is exclusively peritoneal, and has a thin clean border, that is, the peritoneum has been internally denuded by the destruction of a portion of the mucous coat around the aperture; in the latter, the whole substance of the intestine is included in the aperture, and the peritoneal margin is irregular, ragged, and flocculent, as if lacerated, after having been reduced to a mere shred by ulcerative absorption, to the extent of the orifice.

But it is well known that there are other and not less frequent cases of ulcer of the stomach and intestines, in which the consequence of effusion is guarded against by the adhesion of contiguous surfaces. The author just quoted refers to several such cases. I formerly published one on the authority of Mr. Norris, where an ulcer of the colon was stopped by a piece of omentum; and I have since met with similar examples.

In the body of an elderly woman I found an ulcer of the posterior and upper surface of the stomach,



not apparently recent, of the size of a shilling, covered by close adhesion of the peritoneal surface at the root of the diaphragm. This was accidentally discovered, and I had no means of learning the particulars of the case.

In another, a patient of Dr. Farre, in whom, he informed me, intractable symptoms of dyspepsia for many years marked the organic disease, the ulcer was so extensive as to produce the hour-glass contraction of the stomach, and to expose and open the splenic artery, which was the immediate cause of death. Effusion was prevented by the intimate adhesion of the pancreas, which was enlarged and hardened, to the ulcerated orifice in the stomach. Dr. Farre has likewise in his collection an ulcer of the stomach covered by a large scrofulous tumor, situated upon its inferior and posterior aspect. The omentum is affected with small tubercles, the result of chronic inflammation. The disease was of two years standing. I should think it most probable, that it began in the peritoneal surface, and that the mucous coat was secondarily affected.

What, it seems natural to inquire, are the circumstances which determine this important difference of result? In one case nature appears to be taken by surprise; in another to be prepared against the event, and thus to be enabled to ward off the fatal blow. In the strumous and dysenteric sub-

jects in whom the vital powers are reduced by a lingering constitutional disease, and the disease affecting a continuous texture, is of such extent, as must render every attempt at preservation abortive, we cannot be surprised that no trace of a repairing power should be discoverable. I have never seen a solitary ulcer of this description, nor the mucous texture healthy within a considerable space. These appear to be lacerations of the tunics previously disorganized by ulceration, so far as I have had opportunity of examining them. Indeed the existence of six or a dozen apertures emitting the contents of the bowel at the same time, and situated distinct of each other, could not be explained but as so many mechanical læsions of an impaired texture.

The cases just described of small peritoneal aperture, with extensive ulceration of the mucous coat, are also probably ruptures. 1. They occurred soon after taking food or drink. 2. The orifice, drawn into a circular form by the elasticity of the peritoneum, is in the centre of the denuded membrane. 3. A border of peritoneum is left smooth, and of its ordinary density of texture. 4. The peritoneum is not disposed to ulceration as the mucous coat; which is especially prone to this mode of inflammatory action; and if ulceration were destroying the peritoneum, I apprehend, according to that law of pathology, which determines the adhesive thickening and barricading of parts exteriorly as the pro-

cess of ulceration undermines them and advances to the surface, this defensive action would be set up. When previous disease exists, it is well known that the preservative power is less readily excited than where the general health is good. But the health of the unhappy persons, the subjects of these cases, was not obviously impaired, and I imagine therefore, that a mechanical lesion or some other local circumstance must influence the event.

I have a case of recent occurrence to lay before the Society, which seems to me to prove that it is influenced not by constitutional, but by local causes; that it is the size and destructiveness of the ulcer of the mucous coat which excites the adhesive inflammation of the peritoneum. I have never seen a small ulcer stopped, but repeatedly a large one. The covering in, it is clear, must depend on the excitement of the adhesive inflammation upon the peritoneal surface, before the peritoneum has given way, and this I imagine will not be set up unless a larger portion of the peritoneum is divested of its mucous coat by ulceration, than happened in these cases. In the fatal cases, a very small portion only of the peritoneum is denuded, although a superficial ulceration is visible to a considerable extent upon the interior tunic. In the ulcers which have been healed, the mucous coat was probably destroyed by a uniformly progressive ulceration, corresponding to the whole extent of the

aperture comprehended by the adhesion. 2. The situation of an ulcer may be supposed to have some influence. These adhesions are commonly formed where the stomach rests, and is supported on fixed parts. They have generally been formed upon the liver and pancreas. The readiness however with which adhesions take place between the loose but contiguous folds of the intestine and omentum, and between surfaces whose reciprocal motions are more extensive, as the pleuræ of the lungs and ribs, does not allow much weight to this argument.

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### CASE.

An aged woman was brought into Saint Thomas's Hospital, about the middle of the day, with symptoms of strangulated hernia. The practitioner who had directed her admission, had been called to visit her in the morning of the same day. He found her complaining of excessive pain, and vomiting continually. Her abdomen was tumefied and tense; her pulse small and very feeble, and her extremities cold. A small femoral hernia was found in the right groin, which with little difficulty was returned. The pain and other symptoms continued in spite of the measures adopted for her relief, and early the next day she died.

On opening the body a large quantity of fecu-

lent matter was found in the abdomen; the peritoneum was universally inflamed, and the folds of the intestines glued together. The fæculent matter which had been thrown into the stomach by the antiperistaltic action of the intestines had escaped by an aperture of the size of a pea, situated upon its anterior aspect, near the pyloric extremity of that viscus; and upon its posterior surface near the large curvature, was discovered an ulcer of the size of a shilling, with a raised and thickened margin firmly fastened by adhesion to the anterior surface of the pancreas. The mucous coat of the stomach was highly vascular, and points of extravasation were here and there distinctly visible.

This then is an example, in one and the same subject, of the presence and default of the *provision*, as we not very philosophically term it, of nature, or in other words, a proof of the preserving inflammation being excited by the magnitude of the existing injury, and not of that which is threatened.

I shall only add, for the information of gentlemen, whose painful lot it may be to witness cases of the hopeless nature of that detailed in the paper which has called forth these observations, that the chief diagnostic signs appear to be the following.

1. Sudden, most acute, and unremitting pain, radiating from the scrobiculus cordis or the navel, to the circumference of the trunk, and even to the

limbs. I may add a peculiar pain, though I know not how to describe the peculiarity. Its intensity, like that of parturition, absorbs the whole mind of the patient, who, within an hour from the enjoyment of perfect health, expresses his serious and decided conviction, that if the pain be not speedily alleviated, he must die.

2. Coeval with the attack of pain, remarkable rigidity and hardness of the belly, from a fixed and spastic contraction of the abdominal muscles.

3. A natural pulse for some hours, until the symptoms are merged in those of acute peritonitis and its fatal termination in the adhesive stage.

ACCOUNT OF A CASE  
WHERE A  
SEVERE NERVOUS AFFECTION  
CAME ON AFTER A  
**PUNCTURED WOUND**  
OF THE FINGER,  
AND IN WHICH  
AMPUTATION WAS SUCCESSFULLY PERFORMED.  
By JAMES WARDROP, Esq. F.R.S. Ed.

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Read Jan. 21, 1817.

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**P**ATHOLOGICAL researches on the nervous system, have been extremely limited, and perhaps less is known of the diseased changes of structure in the nerves, than of those of the other systems which enter into the composition of the human frame. The treatment of nervous affections is involved in equal uncertainty and obscurity. As in this state of our knowledge, the history of insulated cases acquires importance, the following account of a severe nervous affection which succeeded a punctured wound of the finger, and which was cured by amputation, may not be deemed unworthy of being laid before the Society.

A respectable woman about forty-eight years of age, twelve months before she applied to me, pricked the fore-finger of her right hand, near the point, with a gooseberry thorn. It was immediately followed by a great degree of pain, swelling and redness, and in a few days the inflammation extended along the finger and adjoining phalanx of the middle finger. After continuing nearly three months, during which time no suppuration took place, the pain and swelling went off, except that of the two first phalanges of the wounded finger. These remained extremely painful, and about six weeks previous to the time I saw her, her general health had suffered considerably, and she was attacked with severe nervous paroxysms. The pain in the point of the finger became excessively severe, and the skin of it so acutely sensible that she could not endure it to be touched; even the dread of any thing coming in contact with it, would make not only the finger, but the whole hand flow with perspiration; and to use her own expression, "it was so painful to the touch, she could not hold a pin betwixt the finger and thumb, to save her life." The finger appeared of its natural form, and no change could be perceived in it, except a light red spot on the skin at the point.

The nervous paroxysms usually attacked her two or three times a day, and one of them always came on at the time of her rising out of bed.



During these attacks the pain extended along the finger to the back of the hand, and between the two bones of the fore-arm, darted through the elbow-joint, stretched up the back of the arm to the neck and head, producing a sensation at the root of the hairs as if they had become erect. To these feelings succeeded a dimness of sight, and the pain afterwards went suddenly into the stomach, followed by sickness and vomiting. She had constantly the feeling of a lump in her stomach, and always vomited after taking food or drink. Her flesh too was much wasted, and she had become extremely feeble.

During her illness various cooling and astringent lotions were used without any benefit, and seven months after the accident, three incisions were made into the point of the finger, which gave excruciating pain, but from which she received not the smallest benefit.

As well from her own suggestion as from the opinion I had formed of the disease, it was agreed on to amputate the finger, and accordingly this was done in the usual manner at the second joint.

On carefully dissecting the finger, no change could be detected in the structure of the nerves.

No sooner had she got into bed after the opera-

tion, than she experienced a remarkable difference in her feelings; the sensation of a lump in the stomach, and sickness which she had so long felt immediately subsided, and in half an hour after the operation, she said that she felt for the first time as well as she had done previous to the accident, except merely a slight pain in the stump.

The greater portion of the wound healed by adhesion, and when I saw her some weeks afterwards, her general health was completely re-established, and she never had the smallest return of any of the nervous symptoms.

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Of all those cases of diseased nerves, accompanied with severe symptoms, whether produced from injuries or other causes, where an attempt has been made to alleviate the disease by a simple division of the nerve, there are but few instances where such treatment has been successful; and as in many of these cases the disease ultimately proved fatal, it becomes an important practical point to decide, where the disease affects a nerve of any of the extremities, on the propriety of amputating the limb, in preference to the mere division of the nerve; an operation which may on first considering the subject appear severe, but when contrasted with the patient's sufferings, and the danger of a fatal termination, may with much prudence be adopted.

The success of amputation where the affection is produced from an injury of the nerve, is illustrated in the case which has now been related, as well as in that published in the Fourth Volume of the Transactions of this Society\*. Had the nerve been merely divided in this latter instance, as was originally proposed, and as was done in a similar case related by Sir Everard Home, in the Philosophical Transactions, it is extremely probable that the operation would have been attended with the same fatal result.

It has been proposed, but I do not know if the operation has ever been performed in this country, to divide the nerve of the finger affected in epilepsy, where the fit commences with an *aura*. The experience of medical men in dividing or in removing portions of diseased nerves might not have led to the anticipation of a favourable result from such an operation. I have, however, been informed by Dr. Mayer, an intelligent Hanoverian practitioner, that he saw in a case of epilepsy where the paroxysms came on with the *aura*, the little finger amputated and followed by a complete abatement of all the nervous symptoms.

These observations lead me to conclude, that in cases of injury of the nerve of a limb, followed by an affection of the nervous system in general, it is

\* By Dr. Denmark, p. 48.

preferable to sacrifice the limb by having recourse to amputation, than to attempt to save the patient's life by a simple division of the injured nerve.

When a nerve is injured in any part of the body, where amputation is inadmissible, the complete division of the nerve becomes the only mode of treatment which can be had recourse to. It is not a very unusual circumstance for a wound of the frontal branch of the fifth pair of nerves to be followed by amaurosis, and the complete division of the nerve beyond the injured part, has restored vision. A similar operation on other injured nerves, may therefore be expected to produce equally beneficial effects.

**AN ACCOUNT**  
**OF SOME**  
**REMARKABLE SYMPTOMS**  
**WHICH WERE CONNECTED WITH A PAINFUL AFFECTION**  
**OF THE**  
**EXTREMITY OF THE LEFT THUMB,**  
**TOGETHER WITH THE**  
**MODE OF TREATMENT.**

**By JOHN PEARSON, Esq. F.R.S. F.L.S. M.R.I.**  
**SENIOR SURGEON OF THE LOCK HOSPITAL, &c. &c.**

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*Read April 1, 1817.*

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**LADY** —, aged eighteen years, was attacked suddenly by an acute pain on the inner part of the left thumb, near to its extremity, on the 14th of November, 1814. The pain extended gradually to the first articulation; but it was unattended by redness, tumefaction, or any other visible character of disease. The lady supposing that this acute pain indicated the commencement of a whitlow, immersed her thumb in hot water, several times in the day; and deriving no relief from this, she applied a poultice of bread and milk, which seemed

rather to aggravate her sufferings. After the lapse of about fourteen days, she consulted a surgeon, who directed two leeches to be applied on the affected part, and the poultice to be continued.

On the following day the thumb became inflamed and swollen as far as the second joint, and had acquired so high a degree of sensibility, that Lady — experienced a most severe pain from the slightest touch, and the muscles of the part were no longer capable of voluntary motion. The fore-finger of the same hand soon became disordered by a similar affection, was morbidly sensible in a high degree, and its muscular powers were equally obstructed. The three remaining fingers of the left hand were gradually subjected to the agency of this disease; they participated slightly in the morbid sensibility of the thumb and fore-finger, but their flexor muscles became so much contracted, that the nails of the fingers were pressed forcibly against the palm of the hand; they were no longer under the control of the will, and every attempt made to extend them, was attended with insupportable pain.

This disease proceeded by degrees, from the thumb and fore-finger, to the fore-arm; the skin and muscles became painfully sensible, the joint of the elbow was contracted, and in a short period of time, very little power of voluntary motion remained in the brachial muscles, from the shoulder

down to the hand. Lady — was now obliged to suspend her arm in a sling; the sensibility of the whole limb had become inexpressibly distressing; the bulk of the arm likewise diminished gradually, so that in the space of about three months, it was reduced not less than one inch in its circumference, between the elbow and the wrist. The right arm became, by insensible degrees, involved in this extraordinary morbid affection; it acquired a painful sensibility, and a considerable diminution of its muscular powers. Lady — was not indeed obliged to support it with a sling, but the debility was such, as to render her unable to use a pen, and had she been capable of this effort, the pressure necessary for the sustaining and employing of so light a substance, would have excited an insupportable access of pain. The right arm never exhibited any discolouration, intumescence, nor indication of atrophy; it admitted also of such motions as did not expose any part of its surface to external pressure; she likewise enjoyed occasional intervals of relief from suffering, extending from twenty-four to forty-eight hours, yet, even during these periods of comparative ease, she was quite disabled from raising a small weight, or using any exertion that required the compressing of a solid body.

In the course of a few weeks from the commencement of this disease, her ladyship began to complain of pain and debility in the lower extre-

mities: this morbid condition of these parts allowed of frequent intermissions; but whenever she was suffering from an omission of pain, she was rendered incapable of walking. During the intervals of these attacks, she experienced a great weakness of the lower extremities, and nearly an inability of locomotion, being incapacitated from using exercise for more than a few minutes, at any one time.

From an early period after the attack of this disease, and while it was making an alarming progress, her ladyship was attended by very respectable professional gentlemen, who resided in her own neighbourhood; she occasionally derived a temporary benefit from their assistance, but the more prominent symptoms of her complaint were not subdued.

Early in the Spring of 1815, Lady — was removed to Edinburgh, and had the advantage of consulting some of the most eminent physicians and surgeons in that city. Various tonic and antispasmodic medicines were prescribed, and different topical applications were employed; but no considerable relief was derived from any of them. She was then advised to take mercury in small doses, with a decoction of sarsaparilla, and from these remedies she seemed to obtain some benefit; but her appetite becoming quickly impaired, and her strength visibly decreasing, she soon abandon-



ed this course of medicine, it being judged expedient to forbear from any further trial of mercury.

It having been recommended to her ladyship to have recourse to cold bathing, she used the shower-bath, and likewise went to the west for the convenience of immersion in the open sea. She was commonly refreshed and invigorated by bathing ; yet, notwithstanding the partial advantages which resulted from these means, the pain, spasms, and morbid sensibility of the superior and lower extremities continued to harass her ladyship with unabated severity. In the month of February, 1815, the case of Lady —— was transmitted to me, and I was favoured with some correspondence on the subject by Mr. George Bell, surgeon in Edinburgh, in the month of March ; but these epistolary communications were not productive of any important benefit to her ladyship.

In the month of August, 1815, the Countess ——, her mother, having relinquished almost all hope of her daughter's recovery, determined to place her under my immediate care ; and the young lady being quite unequal to the circumstances of so long a journey in a carriage, she was sent to London by sea, in the beginning of September.

Lady —— was greatly refreshed by the sea air, and the voyage had contributed to improve her appetite and exhilarate her spirits ; but the original

symptoms of her disorder continued much in the same state, as before her departure from Scotland. At my first visit, September the 6th, I found the left arm considerably wasted ; the thumb and fore-finger not contracted, but so exquisitely sensible, that they could not endure the pressure of the slightest substance ; the three contiguous fingers were inflected, firmly, into the palm of the hand ; the joint of the elbow was contracted, and the whole arm had become preternaturally and painfully sensible to every impression. The right arm had acquired a high degree of sensibility, and was extremely weak ; but there existed no contraction of any joint, nor conspicuous atrophy of the limb. I learnt also, that in addition to the unceasing state of suffering to which her ladyship had been so long accustomed, she had extraordinary accessions of pain and spasm, during several hours, every two or three days, and that on these occasions, the muscles of the forehead and face were so much disturbed by convulsive motions, as to change considerably the natural appearance of her countenance. At this time the health of Lady — was delicate, but not sensibly impaired : the catamenia more regular, yet rather too abundant, and sometimes approaching to menorrhagia ; under these circumstances there commonly occurred an exacerbation of her local complaints. She suffered likewise from leucorrhea, and her bowels were generally confined, requiring the occasional assistance of gentle aperients.

On contemplating the present state of Lady —, in conjunction with the written narratives which had been transmitted to me, I was confirmed in the opinion which I had previously formed, that the several distressing symptoms which afflicted her ladyship, were immediately connected with a morbid condition of the nerves distributed to the extremity of the thumb. As every attempt to elevate and extend the three contracted fingers, met with much resistance and excited considerable pain, I was desirous of ascertaining whether those two circumstances were to be attributed chiefly to a rigid state of the joints, or to a permanent spasmodic state of the flexor muscles. To gain information on these points, I stimulated the surface of the skin covering the muscles on the inside of the fore-arm, very gently with a piece of thick gold wire, the point of which was blunted, and was agreeably surprised to find, that by continuing this process during a few minutes, the fingers were raised spontaneously, from the palm of the hand, without exciting any sensation of pain. On discontinuing the mechanical stimulant, the fingers gradually resumed their habitual state of contraction. I repeated this experiment on three or four successive days. At the first, the sensation produced by the irritant was not disagreeable; but on each succeeding trial, after the first day, it induced a sense of uneasiness and fatigue in the parts affected, which became at length almost insupportable; nor was the degree of relaxation subsequently remark-

ed in the flexor muscles of the fingers, nearly equal to that which was conspicuous on its first application.

Lady — was now directed to take some tonic medicines, and various powerful narcotic applications were made to the thumb, and to the hand; but no sensible benefit was derived from them.

During the course of many years' practice, several cases of the local affection of a nerve or nerves, accompanied by muscular spasms, had occurred, and had often proved very untractable. I was at length induced to attempt the cure of these painful complaints by inflicting a disease, which should extend over a large portion of the surface of the body, and which, after exciting a series of actions in the skin, should finally cause an extensive eruption, attended with the usual concomitants of certain exanthemata. The disease from which this young lady was suffering, having resisted, hitherto, all the efforts of professional skill, and as the most serious consequences were to be apprehended from its continuance, I thought myself justified in adopting a mode of treatment, which, although painful and inconvenient, was unattended with danger, and would leave no unfavourable impression on the general constitution.

I directed a stimulating liniment \* to be rubbed during ten minutes, twice in the day, over the whole circumference of the upper part of the arm, beginning immediately below the joint of the shoulder, and including a space bounded by the inferior extremity of the deltoid muscle. No local effects upon the skin being perceptible at the end of three days, I added half a drachm more of the sulphuric acid to the composition, and desired that it might be applied three times in the day. This application was first used on September the 23rd, and on the 5th of October the upper arm began to look red, and was more painful than usual. I had given express directions that on the first appearance of redness and tumefaction of the part, the further application of the liniment should be suspended; but the young lady, anxious to derive all possible advantage from this medicament, succeeded in prevailing on her attendant to persist in applying it. The liniment was accordingly used during the incipient state of inflammation, and in the space of little more than an hour, the whole arm, from the shoulder to the hand was red, heated, tumid

\* ℞ Olei Olivæ ℥iiss.

—— Terebinthinæ ℥iss.

Acidi Sulphurici ℥i. M.

I have been more than thirty years accustomed to use this liniment, in various complaints, especially in those of the joints. I inserted it in the Pharmacopœias of the Lock Hospital, and of the Public Dispensary, when I first became connected with these institutions.

and very painful. These symptoms became gradually more intense, and were diffused more extensively, increasing progressively during five days. Within this period, a number of small vesicles containing a pellucid fluid appeared on various parts of the arm; the face became swollen as in the acute erysipelas, and vesicles were distributed on different parts of its surface; the cellular membrane of the eyelids was likewise so much distended as to obstruct vision completely. The whole surface of the body, indeed, partook of these morbid appearances; but the vesicles were scattered very sparingly over the trunk and lower extremities.

During the progress of this exanthematose affection, Lady — maintained her accustomed fortitude and cheerfulness; and although her pulse was much increased in frequency, her sleep was greatly interrupted, and she was considerably incommoded by the local irritation, yet her health did not appear to be materially disordered. On October the 12th, the heat, redness, tumefaction, and uneasiness of the arm, were so much diminished, that her ladyship obtained some refreshing sleep on the sofa, and from this period she recovered visibly every day. About the fifth day after the appearance of this cutaneous disease, Lady — observed her thumb to be agitated by a spontaneous motion, unattended with pain: this excited some degree of alarm in her mind, but she was

most agreeably surprised to find, that on touching her thumb, the morbid sensibility was gone, and she could hold it with the fingers of her right hand, without exciting any sense of uneasiness.

The thumb and forefinger of the left hand, having now lost their morbid sensibility, they became gradually capable of regular voluntary motion : the disease was removed, and the affected arm and hand were acquiring strength and regaining daily the facility of performing their customary actions. The salutary change in the three contracted fingers, was not very sudden ; they relaxed, however, by slow degrees, but the ring-finger and the little finger did not resume their natural appearance and regular power of action till after the lapse of five or six weeks. The contraction of the elbow-joint amended slowly, but at the expiration of little more than two months from the application of the rubefacient, all appearance of the disease had vanished ; the hand and arm had nearly regained their former bulk and form ; and Lady —— has enjoyed good health, with perfect freedom from every symptom of her complaint, since the beginning of the year 1816, to the present period.

As a conclusion to this paper, I beg leave to subjoin a few observations connected with this subject. The records of medicine and surgery contain a multiplicity of narratives of extraordinary symptoms resulting from pressure on particular

nerves; from various injuries inflicted on them, and from morbid alterations in the structure of these organs of sensation. We likewise possess reports of the several modes of treatment adopted, some of them suggested by reasoning, others derived from observation, or from accident; yet a large proportion of them tending to shew how unavailing the best directed efforts of our art frequently are, in conferring permanent relief on the patient. In the year 1795, I published a paper containing accounts of some extraordinary symptoms arising from pressure, &c. on certain nerves, in the Sixth Volume of the "Medical Facts and Observations." At that period, I was unacquainted with the particular method of treatment which has been described in the preceding history; nor do I conceive that it was applicable to the cases recorded in that paper.

It must have occurred to every person conversant with physiology and pathology, that the morbid sensations and disordered actions which are often consequent on the agency of an external cause, or on a diseased condition of the sentient organs, exhibit considerable variety in the phænomena. A nerve may suffer injury from the infliction of a wound from a laceration, or contusion, forcible elongation without any solution of continuity, mechanical pressure, from chemical agents, including cold, from a change of its structure, con-

re senses, and capable of being dis-



played by anatomical examination ; it may likewise exhibit a deviation from its natural functions, for which no preceding cause can be assigned, and where nothing unusual in its appearance or organization has been detected by subsequent dissection. These circumstances, with many others, which might be enumerated, seem to warrant the suspicion, that the diversified phænomena which are consequent on the several impressions made on one or more branches of particular nerves, may imply some existing difference in the previous condition of the sensitive organ whence they are derived ; that the various and often dissimilar symptoms may depend on some specific physical modification of the morbid part, or of those connected with it by a proximate union ; or that the morbid state is controuled by the laws of consent or sympathy. If there be any foundation for these conjectures, then it may be regarded as probable, that a correct acquaintance with the symptoms which are peculiar to each form of the disease, would conduct to a more methodical and successful mode of treatment.

That mode of sensation which is commonly designated by the term pain, implies the state of corporeal uneasiness or suffering, experienced by a percipient being ; and pain being usually conjoined with certain adjuncts, which are objects of distinct consciousness to the patient, our common language is competent to express in a very great num-

ber of instances, not merely the measure, but likewise the distinguishing qualities or circumstances which indicate a specific difference in the uneasy sensation. These discriminating characters are most obvious in parts where there exists a great dissimilarity of structure, and in organs which are appropriated to the execution of very different functions; to which may be added, the modifications that are derived from the various existing causes, whether remote, or proximate.

It is not unknown to persons conversant with much practice, that pain may be accompanied with a sensation of heat or cold; of distension or contraction; of torpor, laceration, comminution; that it may be pungent, lancinating, pulsating, or attended with convulsive motions, rigid muscular contraction, fainting, &c. A practical application of our knowledge of the several concomitants of pain, may assist us in forming a correct diagnosis of the morbid alteration that has taken place in the seat of a disease; and it may sometimes prove a most valuable and important guide, when it is necessary to carry our inquiries into the nature of a complaint which exists in parts that are removed from the immediate scrutiny of the senses.

In the preceding narrative, it is stated, that the pain and morbid sensibility were accompanied by a permanent spasm in the three fingers, and in the joint of the elbow, and by interrupted convulsions,

in other affected parts ; yet, as the *spasmi tonici* could be readily suspended by gently irritating the cutaneous nerves of the inner part of the fore-arm, I did not regard the condition of these flexor muscles, as indicating any essential difference in the nature of the case, or requiring any peculiar attention in directing the mode of treatment. I had learnt from long observation, that, in certain morbid affections of particular nerves, when the topical remedies designed to promote relief, were applied immediately, to the primary seat of the disease, they commonly failed of conferring benefit on the patient ; and I believe, that unless in those instances where the malady is derived from some mechanical cause acting upon a nerve, situated within the range of an operation, the division of the sentient organ is not generally effectual in removing the distressing symptoms. It has been frequently remarked, and my own experience confirms the truth of the observation, that where a serious accident, such as the infliction of a large wound, an extensive burn, the invasion of a disease affecting the whole surface of the body, or greatly disordering the functions of the animal economy, has occurred to persons infested by convulsive maladies, a temporary suspension, and not unfrequently a permanent cure of these complaints has been the salutary consequence. In the course of contemplating facts like these, and combining them with the phenomena resulting from the agency of counter-stimulants, I am

eases which are situated both externally and internally, I was first induced to try the powers of medicaments applied at a distance from the part referred to, as the primary and immediate seat of pain; and likewise to attempt the making a powerful impression on the surface of the body, consisting of a regular succession of actions on the skin, bearing some analogy to the progress of exanthematose affections. This curative progress is more peculiarly applicable in diseases conjoined with the morbid state of a nerve, where there is reason to presume, that the part referred to as the source of the symptoms, is in reality the original seat of the malady.

When a punctured wound is inflicted on one of the toes, or a finger, by a small and sharp instrument, as a needle, or the fine point of a pair of scissors, a filament of a nerve is sometimes injured. The minute wound commonly heals immediately; but the muscles of the limb frequently become subject to spasmodic affections, during many months after the infliction of the injury, and the skin, with the subjacent parts, indicate a preternatural sensibility when pressed upon. In one of these cases, where the arm and hand of a young lady had become nearly useless, and the symptoms had been combated by all the usual remedies, in vain, during twelve months; the patient was cured by the application of the liniment, which excited a considerable tumefaction of the whole arm, with a

vesicular eruption. It was necessary, in this case, to produce the cutaneous disease three times, at intervals of about a week, and it never extended beyond the upper extremity. In some cases, likewise, of painful contractions of the large joints, which were unaccompanied by inflammatory symptoms, or any remarkable change in the structure of the parts, a similar mode of treatment has been attended with complete success, after the common methods of cure had been employed, during many months, without the least advantage. I think myself warranted to insist on the cutaneous excitement, with its concomitant appearances of tumefaction, and of an eruption, more or less extensive, as circumstances essential to the obtaining of a cure in these peculiar affections of a nerve. It is proper to mention in this place, that there exists a very striking difference in the susceptibility manifested by the skin of persons suffering from these complaints. In some patients it is so irritable, that the concurring symptoms produced by the rubefacient appear in the course of two or three days; whereas ten days or a fortnight may elapse before any heat, redness, or tumefaction shall be seen in others; and in a few instances, no sensible change on the surface of the skin, nor any beneficial alteration, has occurred from a long continued application of the liniment. It is, by no means, my intention to speak of this as a remedy, as possessing any specific or peculiar qualities which give it a superiority over other remedies.

merely represent this formula, as being the application which has succeeded more certainly and beneficially than any other stimulating medicament that I have employed. Cantharides, tartarized antimony, a solution of gum ammoniac in the vinegar of squills, and sometimes euphorbium, &c. are capable of exciting cutaneous irritation very extensively; but I think these effects occur with less certainty, are not so durable, nor of equal efficacy, as when the compound sulphuric liniment is used. Neither the mode of treatment which I have now recommended, nor any other method yet made public, can be expected to succeed in every case, where a nerve is morbidly affected; but I believe, that the liniment may be always employed without danger, and very frequently with the most desirable result, provided the directions suggested in this paper, be conformed to strictly, and with a judicious constancy.

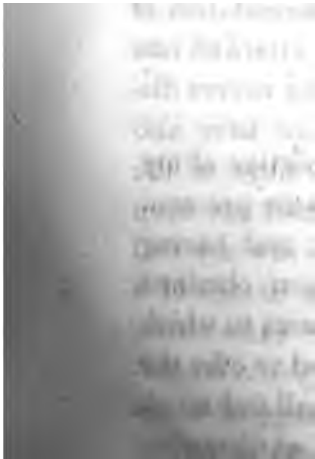
This mode of treatment is not applicable to that diseased condition of the nerves, in which a conspicuous morbid alteration is discernible in their structure; where little tumors, resembling noduli, are found in some of the larger ramifications of these organs of sense, connected with pain, lameness, muscular spasms, and sometimes with atrophy of the disordered limb. The existence of tumors, thus situated, has been noticed by different writers \*;

\* *Vide* Med. Facts and Obs. loc. cit. See also Portal, Anat. *hum.*, The Edinburgh Medical and Physical Journal.

but I am not aware that a satisfactory account has been presented to the world, of the differences which subsist in these productions, and of the rise, progress, and ultimate change of structure which occurs in nerves when infested by such diseases.

I am not authorized by experience, to offer any information on the effect of this mode of treatment in cases of the *tic douloureux*; when nerves proceeding immediately from the cerebrum are the subjects of this painful disease, temporary relief is often conferred, and sometimes permanent benefit has been obtained by dividing the nerve whence the suffering seemed to be derived; but it must be likewise acknowledged, that this operation has often failed of curing the disease. In an instance, where the painful affection was referred to one finger, the patient was relieved by the amputation of the part; but a similar disease soon attacked one of the fingers of the other hand. The nerves distributed to different parts of the face have also been successfully divided, until very little of the surface of the skin remained, which had not been subjected to the operation. I never saw any real benefit derived from the division of a branch of a nerve, in either the upper or lower extremities, unless in those cases where the agency of a mechanical cause, or some well-defined change of structure existed. When no deviation from the natural condition of the part can be detected by the most able and accurate examination, and when the

a distance from the immediate seat of the pain, sympathise on every accession of the paroxysm ; there is ground for presuming, that the source of the malady resides in some other portion of the nervous system, and that the division of the nerve in the part whence the pain seems to originate, may prove rather injurious, than beneficial. This unfavourable issue of an unsuccessful operation, is not an assumption founded on mere reasoning or analogy : cases have occurred, where the patient has not only been disappointed of relief ; but the irritation has been transferred, subsequently, to the spinal marrow and the brain.





**CASES**  
**OF**  
**FUNGUS HÆMATODES,**  
**WITH**  
**OBSERVATIONS;**  
**By GEORGE LANGSTAFF, Esq.**  
**AND**  
**AN APPENDIX**  
**CONTAINING**  
**TWO CASES OF ANALOGOUS AFFECTIONS.**

**By WILLIAM LAWRENCE, Esq. F.R.S.**  
**PROFESSOR OF ANATOMY AND SURGERY TO THE ROYAL COLLEGE OF**  
**SURGEONS, &c. &c.**

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*Read May 27, 1817.*

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**H**AVING devoted a considerable portion of my time during the last fourteen years, to the prosecution of the study of morbid anatomy, and having with considerable labour and attention obtained specimens illustrating most of the diseases to which the human body is liable, I am induced to offer the following cases to the Society; and shall feel much gratified, should they be considered as throwing any light upon the hitherto ignorable diseases, they are intended to describe.

I have adopted the term *Fungus Hæmatodes*, although it does not appear to me always applicable, because it is the general name of a disease, the external character and structure of which are well understood by most pathologists; and further from respect to the gentleman \* who first gave the disease this name.

For the better elucidation of the subject, I shall first describe the tumors that have the fungoid character, which, if situated on the external part of the body, would cause absorption of the integuments, and bleed freely from the fungous growth, if not prevented by sloughing; secondly, the pulpy or medullary kind, which I consider as a species; thirdly, the union of both as a variety; and lastly, that which is called carcinoma, and which, in my opinion, has so far an affinity to fungus hæmatodes, that the latter may be considered a modification of the former.

*Case of Fungus Hæmatodes.*

A man, forty-five years of age, of a sallow complexion, whose health had been declining for several months, noticed a tumor about the size of a small marble, on the anterior part of the right leg,

\* Mr. Hey, of Leeds.

about four inches below the superior part of the head of the tibia, and an inch and a half from the spine of that bone. As the tumor was not at its commencement attended with pain, it was neglected by the patient, till it had extended to two inches and a half in diameter, to which size it had arrived in four months. It was now painful when pressed, or when the limb was moved; the temperature of the integuments covering the part was increased, and they shewed a delicate purplish blush; the swelling was firm, yet slightly elastic.

Leeches and evaporating lotions were applied; the state of his general health, his diet, and the proper position of the limb were attended to. This plan of treatment was assiduously pursued for more than a month, without checking the increase of the swelling, which was now double its former size; the integuments were more discoloured, and had been partly absorbed at the centre of the swelling to the extent of the circumference of a shilling, rendering the part almost as thin as if only covered with cuticle; but there was not the least fluctuation to be felt, the tumor remaining firm and elastic.

Shortly afterwards, the cuticle was absorbed, and a fungus shot forth, accompanied with a slight discharge of blood. The fungous growth gradually protruded, although means were employed to

check it; the surrounding integuments were in consequence removed by the absorbents to the circle made by the base of the tumor: there was during this period a discharge of blood, frequently of an ichorous quality; the surface of the fungus, when the latter discharge took place, having a sloughy appearance, which it did not possess when the hæmorrhagic action was present.

The local disease, in spite of medicine, had now brought on so great a degree of constitutional disorder, as to endanger the loss of life unless the patient submitted to the amputation of the limb, as the most likely chance of saving him. To this operation, however, he would not consent, but agreed to the proposal of having the tumor extirpated.

With a view to prevent a recurrence of the disease, the sound integuments were freely removed with the fungus, which seemed to have its origin in the cellular tissue of the *tibialis anticus*, and *extensor longus digitorum pedis*. It was necessary to remove portions of the substance of both muscles. There was considerable hæmorrhage during the operation, which principally proceeded from the cutaneous and muscular arteries given off by the *arteria tibialis antica*, and some branches of this from their increased size were obliged to be secured by ligatures. The patient's health slowly improved, the wound cicatrized in a very tardy

manner to about the size of a shilling, and upon the seat of the former morbid growth, but it could not be made to heal further. The newly formed integuments were extremely thin and glossy, and shewed several superficial veins.

About three months after the operation, the fungous growth again began to shoot out, and it appeared quite useless to attempt to prevent its malignant progress. It discharged blood and ichor as in the former instance ; the patient experienced almost constant and excruciating pain in the base of the tumor, and also in the upper part of the tibia. His health in two months more was affected to an alarming degree, which, with the unsuccessful result of the operation, induced him to agree to amputation. The limb was therefore removed above the knee.

I injected the amputated limb with size and vermillion, to ascertain as nearly as possible the vascularity of the newly formed part. A longitudinal section was afterwards made through the middle of the tumor, when it was found to arise from the cellular substance of the muscles of the *tibialis anticus*, and *extensor longus digitorum pedis*, and had produced a pulpy white and degenerate state of the muscular fibres in the vicinity of the diseased part. The substance of the diseased part was composed of organized lymph, broken down coagulated blood, and a pulpy brain-like mass. The irritation and


pressure of the tumor had also occasioned absorption of the periosteum of the tibia to the extent of four inches, and the surface of that bone was removed to about the same length by a similar process. The external coat of the anterior tibial artery, near the disease, was thickened by inflammation, and its accompanying vein was for several inches filled with coagulated blood and pulpy matter, which did not adhere to its internal surface; but the vessel although thicker than natural, did not possess its wonted tenacity, and was of a bluish colour, which it still retains in spirits.

On examining the stump, five days after the operation, it was found to have adhered as much as could be expected, considering the patient's reduced state of health. All the ligatures were removed by the 12th day after the operation; but the wound healed very slowly, looked extremely unhealthy, and discharged an offensive sanies in profuse quantity. Although every endeavour was made to re-establish a healthy state of the constitution, it was unavailing; he became extremely irritable, and weak; the digestive organs were more deranged; he had almost constant cough, with expectoration of mucus, unaccompanied with hectic fever. The discharge from the stump continued; he sunk gradually, and died eight weeks after the amputation.

*Dissection.*

There had not been the least disposition in the stump to reproduce the disease for which the removal of the leg was deemed necessary. It had a sloughy appearance merely from the want of vital power in the part necessary for its reparation.

The liver was large, pale coloured, and its structure remarkably soft; there were several tubera from the size of a pea, to a small nutmeg, in its substance, and on its surface, but they were not much elevated; the larger kind having a central dimpled opake spot on the peritoneal covering, with minute, newly formed and tortuous arteries supplying these parts; similar to what we notice on the conjunctiva when opacities or specks are forming on the transparent cornea. The tubera consisted of loose coagulated blood, and medullary substance like the disease in the leg; they were very vascular, not divided by cellular septa; and had very delicate cysts. In the lungs, and immediately underneath their pleuræ, there were several bodies, larger than those in the liver, and the air cells and ramifications of the bronchia were loaded with a very thick white secretion. The bronchial glands were enlarged, particularly those between the division of the bronchia. When cut through, this enlargement was found to be occasioned by



fungous tumors in the centre of each ; the external parts of the glands preserving nearly their natural appearance.

*Case of Fungus Hæmatodes in the Urinary Bladder,  
Liver, and Lungs.*

I. B. a pauper, sixty-eight years of age, had laboured under an affection of the bladder upwards of five years, and had been under the care of several surgeons without experiencing any essential relief. During the last six months of his life, he had suffered the most excruciating pain in the region of the kidneys and bladder, attended with almost constant desire to void urine, which was effected with the greatest difficulty, either by drops, or in a very small stream, and generally coloured with blood. He also felt much pain in the rectum, which was greatly aggravated by costiveness, and was teased with a frequent dry cough, accompanied with dyspnoea.

An examination per rectum, proved that there existed an enlarged state of the prostate gland, and slight pressure occasioned great pain. A bougie of moderate size was introduced into the urethra to ascertain the state of the canal. It passed readily as far as the membranous part, but could not be conveyed beyond it ; and it was with



the greatest difficulty one of the smallest kind was made to enter the cavity of the bladder.

The symptoms daily increased, although every exertion was made to alleviate his suffering; his health and appetite rapidly declined; and his bowels, which before had usually been obstinately costive, became quite the reverse.

On the 16th of March, he voided scarcely any thing but blood from the bladder; the quantity, although it flowed by drops, was in the course of twenty-four hours considerable, and the efforts of that viscus were so frequent and violent, as to occasion, to use his own words, "the most distressing torment."

He became feverish; his pulse extremely small and frequent; tongue parched, and of a dark brown colour; gums and teeth covered with sordes; and the sensorium much deranged. In short, he resembled a person in the last state of typhus. In this miserable state he lived four days.

### *Dissection.*

The first thing on opening the abdomen, which attracted particular notice, was a bloody effusion beneath the peritoneum, on the right side of the

body, extending from the seat of the kidney as far as the pelvis. The fluid proved to be offensive smelling urine mixed with blood, and measuring altogether three pints in quantity. The cellular substance covering, as well as that connecting the psoæ muscles and the iliacus internus, was in a sloughy state. My great desire now was, to ascertain the course of this unnatural escape of urine. The kidney was large, very pale coloured, but healthy in structure : its pelvis had been dilated to a considerable extent, as was the whole course of the ureter ; the latter from over distension had sloughed and burst about midway between the kidney and where it enters the bladder.

The left kidney was natural, but its pelvis and ureter were greatly distended with turbid fetid urine. The bladder and urethra were next examined. The former felt like a solid substance : on laying it open it was found to contain a tumor as big as a large orange, the surface of which was covered with recently coagulated arterial looking blood, which being removed, exhibited layers of concentrated coagulated blood, similar to what is seen in aneurisms. After minutely examining the tumor, it was discovered to derive its origin from the prostate gland, chiefly from the middle, or third lobe. It had occasioned absorption of as much of the mucous coat of the bladder as allowed of its readily into the cavity of that organ ; the art of which was highly inflamed. A

todes. The tubera answer the description given by Dr. Baillie, of the soft pulpy tubercle in the lungs. And Mr. Wardrop, in his Observations on the fungus hæmatodes, says, from the description and delineation of this tubercle given by Dr. Baillie, that he is induced to consider it as having great analogy to fungus hæmatodes.

*Case of Fungus Hæmatodes in the Lungs,  
Uterus, &c.*

Mrs. B——, fifty-two years of age, who had given birth to several children, experienced during the last six years of her life, a gradual diminution of her bodily health, in consequence of the growth of a tumor, which could be felt through the parietes of the abdomen; and previous to her death, had attained such a magnitude as to occupy that cavity nearly in the same degree that the uterus does in the last month of utero-gestation.

Several professional gentlemen saw the patient. The diversity of opinion respecting the nature of the disease was great, yet not surprising; as will be acknowledged when the result of the inspection is duly considered. The general idea was in favour of its being an ovarian enlargement, the tumor having ascended as if it arose from the pelvis, with more extension to the left side (the left) than the right. The menstrual periods had ceased four months previous to the death of the patient.

The principal seat of pain during the growth of the tumor was in the loins ; but the kidneys during the progress of the disease performed their functions properly ; though the urine was frequently very turbid. The bowels were irregular, but easily acted upon by small doses of castor oil.

During the last twelve months of her existence, she had been greatly distressed with a short, frequent, dry cough ; pain in the chest, and dyspnoea. There was a gradual emaciation of the body, unaccompanied with hectic fever ; paroxysms of dyspnoea became more frequent and violent, and she died like a person in a state of suffocation.

*Dissection.*

On exposing the abdominal contents, the omentum, devoid of adipose substance, was seen tightly stretched over an immense tumor, without having formed any morbid adhesions. The transverse arch of the colon passed over the anterior and middle part of the tumor, and had made a deep indentation in it : the descending arch and sigmoid flexure were greatly displaced, so as to be nearly on a line with the linea alba : the small intestines were also pushed into the right hypochondrium. The pancreas was likewise expanded into a thin substance on the upper surface of the diseased mass ; the surface of the peritoneum not having suffered the least inflammation.

The next step of the dissection was to ascertain the seat and nature of the disease. It was beneath the peritoneum, about the size and figure of a large cocoa-nut with all its coverings ; and placed rather obliquely across the spine, reaching from the concavity of the left ilium to the under surface of the liver. Before the peritoneal covering was reflected from the cyst containing the tumor, which was easily done, from their being connected only by loose cellular substance, the enlargement was supposed to be a diseased condition of the kidney ; but this viscus was perfectly healthy, though forced into the iliac region by the growth which occupied its situation.

On the surface of the cyst the veins were extremely numerous, very large, and communicating with each other very freely. Some of the largest were filled with a whitish pulpy matter mixed with blood, which from its dark colour and firmness must have been coagulated for some length of time. A section was made of the diseased production ; the cyst was not very thick, its contents were composed of such a variety of heterogeneous masses, as to render accuracy of description impossible ; yet some of the parts were sufficiently dis-

toratory evidence of its belonging to the hæmatode. It seemed composed of irregular pulpy substance, some of which was mixed with coagulated blood, and some of the internal layer of the

tumor. Into the soft portions many of the veins opened; the arteries were minute but numerous; the principal bulk of the tumor was composed of a solid gelatinous matter, and of a substance not unlike grated beef, giving the whole the appearance (if the comparison may be allowed) of a slice of rolled brawn.

The morbid action had gone on to a great extent in the lungs. They were filled, and the surfaces covered with various sized grey-coloured tubera. In several parts these had grown together, and formed large bodies, which were proved by injection to be vascular throughout.

These tubera possessed very delicate cysts, and were formed of a substance resembling the external layer of the tumor; with this difference, that they had a more fungous appearance, arising from their extreme vascularity. So small was the portion of lung capable of carrying on respiration, that I am astonished that life was preserved thus long.

The liver and other abdominal viscera were not diseased. In the substance of the uterus there were several small tubera, similar to those found in the lungs, and some of the veins were filled with matter of the same consistence, without its having formed any adhesion with their internal coats. The spermatic veins between the layers of

the peritoneum which form the ligamenta.lata were greatly enlarged, and from the tortuosity of their appearance might be said to be in a varicose state: in them were found several calculi of different sizes, some as large as a garden pea. This circumstance I do not consider connected with the specific disease of which the person died; as I have met with calculi in those veins on examining pelvic viscera affected with dissimilar diseases; and I have also seen them where there was not any other morbid appearance in the pelvic contents.

Although I do not imagine the calcareous depositions met with in the above-mentioned veins, to be connected with the disease in question; yet as morbid productions, I think proper to mention the facts in the history of this dissection, and may add, that I noticed the blood in the veins containing such calculi, to be extremely thick and dark coloured, and that the various sized calculi, (from a pin's head to a pea) were in the centre of round coagula of blood, as if this fluid was the original seat of their formation.

Mr. Hodgson, in his valuable Treatise on the diseases of arteries and veins, mentions my having "met with three calculi as large as peas in the veins of the uterus." Similar concretions, that gentleman observes, "are sometimes found in dilated veins surrounding enlarged prostate glands. In such cases it is not improbable that the calculi

are formed in the surrounding parts, and make their way into the veins by progressive absorption." I can only say, I attentively examined, in the instances I have alluded to, the coats of the vessels, and found them perfectly healthy, although greatly dilated.

*Case of Fungus Hæmatodes of the Liver.*

Mr. B——, sixty-six years of age, much addicted to dram drinking, was attacked in May 1810, with violent vomiting of blood, attended with considerable pain in the right hypochondrium. The liver could be felt extending considerably beyond the margin of the cartilages of the ribs, and when moderate pressure with the hand was employed on examination, the pain was increased ; and as he was extremely thin, inequalities of the liver could be felt through the abdominal parietes. There was not much discoloration of the skin, or conjunctivæ, although the excretions from the bowels were very unhealthy in appearance, often black ; and his urine deeply tinged with bile.

He had been in an indifferent state of health for several years, without being incapacitated from attending to his business. During this time he was troubled with anorexia, a short dry cough, and obtuse pains in the left hypochondrium, attended with difficulty in keeping the bowels regular. Al-



terative doses of mercury were employed to induce a healthy action of the liver, and sulphate of magnesia to regulate the bowels, and he gradually recovered this attack, so far as to attend to his ordinary concerns. It was endeavoured, by changing his mode of living, to re-establish his health, but the organic disease was of such a nature as not to be arrested in its progress; though this was so slow, that the patient lingered on, with symptoms of a diseased state of the liver, till November 1813, when dropsy supervened, with frequent vomiting of blood. Ascites with cedema of the lower extremities increased gradually, and he dragged on a miserable existence till the 30th of March, when he refused nourishment, became comatose, vomited blood in considerable quantity, and died.

*Dissection.*

There were nearly two gallons of serous fluid in the abdomen. The liver was very large, and its surface irregular, with variously sized tumors, some as big as a walnut. The principal part of the covering of the convex surface of the large lobe, was converted into a thick cartilaginous substance; and there were short strong bands of adhesion between this part and the peritoneal reflexion on the diaphragm. The covering of the left lobe was only thickly coated with lymph, but several of the tubera on its surface had protruded so far extern-

ally as to cause partial absorption of that membrane, and presented a true fungous appearance.

Sections of the liver shewed that its natural structure had been changed by variously sized effusions of coagulated blood, and brain-like matter, without capsules, but retained by septa of organized lymph; and most of the blood-vessels were filled with the same kind of morbid productions.

When slight compression was made on the diseased mass, a considerable quantity of thick fluid, similar to cream, oozed from the medullary looking substance, and by maceration the whole of this part dissolved into a similar fluid, leaving the blood in a more softened state: both these being washed away, the organized lymph which held them together became visible.

The gall-bladder was thick, shrivelled, and its duct completely obliterated. There was a large coagulum of blood in the stomach, without the least abrasion of its mucous coat, but great determination of blood to its whole internal surface.

The large intestines were distended with inodorous, blackish, thick, mucous fluid, such as he had frequently voided by stool. This fluid was very adhesive, and tinged the fingers nearly as the pigment of the bronchial glands does.

*Case of Fungus Hæmatodes in the Liver.*

A gentleman, fifty-nine years of age, who had lived rather irregularly, had been affected with an hepatic affection upwards of four years, which could not be subdued by art, although he had had the advice of some of the most distinguished physicians in London. During the last six months of his life, he had been subject to occasional diarrhoea, with hemorrhage from the intestines. He became icterical, much emaciated, sunk gradually and died.

*Dissection.*

About half a gallon of fluid was found in the abdomen; the liver was not much enlarged; its peritoneal covering considerably thickened with lymph, and in some parts cartilaginous. The structure was principally of brain-like masses, mixed with loosely coagulated blood, separated by coagulable lymph and cellular septa. That part of the liver which could be recognized as partaking of its natural structure was of a whitish colour, and upon pressure a milky fluid was discharged. Many of the veins were filled with the same substance as was observed in the liver.

The gall-bladder was empty; its coats much thickened, and its natural size greatly diminished,

Every other part of the body appeared free from disease.

*Observations.*

These dissections shew that fungus hæmatodes may attack an important organ, and produce death, without the specific disease diffusing itself to any other viscus.

In most organic affections of the liver, I have noticed, that nasal, stomachic, or intestinal hæmorrhage are not unfrequent occurrences; which I suppose will be considered to arise from excessive determination of blood to the mucous surfaces of those parts, and nature relieving their over distention by hæmorrhagic profluvia.

I have also had frequent opportunity of remarking the morbid sympathy that exists between the liver and large intestines, when the former is diseased or disordered: the mucous glands of the latter secreting a ropy blackish mucus, sometimes mixed with blood, which is frequently discharged by stool, and induces many persons, who have not had the opportunity of correcting their judgment by the inspection of dead bodies, to suppose that such discharges proceed originally from the liver.

*Case of Fungus Hæmatodes in the Kidney.*

A gentleman seventy years of age, who had been hemiplegic for six years, and had experienced for a considerable length of time a difficulty of voiding urine, which was usually tinged with blood, was seized, on the 2d of September, 1811, with retention of urine. This occasioned such distressing symptoms as obliged him to apply for assistance. I introduced into the bladder, with some difficulty, the prostate gland being enlarged; a moderate sized gum elastic catheter, and drew off the urine. From inquiry I found he had been long subject to painful retention, although not under the necessity of having recourse to surgical assistance. He had also suffered great pain in the region of the left kidney, and uneasiness about the rectum.

The effects of the last attack gradually left him, and he was in the same state he had been in for some time previous to it; *viz.* complaining of pain in the loins, and of great difficulty in evacuating the contents of the bladder. A bougie was occasionally introduced, and his bowels kept gently open. In January 1812, he had a fit of apoplexy, from the effects of which he never recovered.

*Dissection.*

There was considerable effusion of serous fluid

between the tunica arachnoidea and pia mater; the vessels of the brain were very turgid, but there was not the least sign of recent effusion of blood, or of old apoplectic cells. The lateral ventricles were greatly distended with serous fluid tinged with blood; and the basilar artery as well as the carotids were partly ossified.

The thoracic and abdominal contents were natural, except the left kidney which was considerably enlarged, and its superior half had the appearance which is observed in fungus hæmatodes. The bladder was of an enormous capacity, and its muscular coat greatly thickened; there were several sacculi of protrusions of the mucus through the membranous coat; the middle lobe of the prostate gland was much increased in bulk, and projected forwards: acting as an imperfect valve when the bladder was full of urine, and thus causing the difficulty he experienced in expelling the contents.

*Case of Fungus Hæmatodes in the Kidnies.*

Miss S. J——s, twenty-one years of age, with delicate constitution, dark hair, and sallow complexion, who had experienced favourably the infantile diseases at an early part of her life, and from the age of fifteen had menstruated with regularity as to time and quantity, was, on the 26th of September 1810, suddenly attacked, about a week pre-

vions to the regular period, with frequent desire to relieve the bladder, and in the course of a few hours an amazing quantity of limpid urine was discharged, without allaying the urgent propensity to void more. The irritability of the bladder increased, and arterial looking blood was discharged in considerable quantity; but as there was great uterine irritation, it could not easily be ascertained from whence the hæmorrhagy proceeded.

From the loss of blood, and violence of the pain, she became extremely pale; pulse small and very rapid, and the mind much agitated; but there was not the least disposition to syncope. The patient was ordered to be lightly covered with bed-clothes, and the most cooling diet to be employed; and cloths wrung from vinegar and water were to be applied, as in cases of profuse uterine hæmorrhage. The bowels which were confined, were relieved freely by neutral salts; and cerussa acetata cum opio, were given to lessen the hæmorrhagic action.

*September 27th.* The violence of the symptoms was somewhat abated; but the greatest distress arose from an incapacity of discharging the contents of the bladder. Having suffered most excruciating pain, I was, after making repeated solicitations, permitted to introduce a catheter, and to my astonishment, drew off nearly a pint and a half

of what appeared chiefly blood, but after coagulation, the serous part, which bore a small proportion, evidently contained urine, which could be detected by its odour. Great relief was afforded by this operation, and it proved satisfactorily to my mind, that the uterus did not participate in the hæmorrhage.

*September 28th.* There had not been any evacuation from the bladder, although the propensity to effect this had been very urgent, and the pain extremely severe. The catheter was again introduced, and upwards of a pint of bright coloured bloody fluid was discharged, which afforded almost instantaneous cessation of pain. The bowels were kept relaxed. Pills repeated, and the refrigerating plan pursued.

*September 29th.* The irritation of the bladder was violent, its contractile efforts frequent, and a considerable quantity of bloody fluid was discharged, which mitigated for a short time her sufferings. From this date to the 10th of October, the symptoms were much similar to those last described; but in addition to them there was the regular menstrual evacuation in increased quantity, accompanied with frequent bilious vomiting. The pills were now discontinued, infusion of roses with Kino prescribed; and as the bowels were irregular, and the evacuations always dark-coloured, and ex-



extremely foetid, alterative doses of mercury were given, and sulphate of magnesia to regulate them.

From the violence and continuance of the hæmorrhage, and frequent sickness, it was supposed by all who saw the patient, that the powers of her constitution would give way, and that she would not survive; she certainly did exhibit a most ghastly appearance, but her spirits remained remarkably good; and although she often vomited, she retained a considerable quantity of nourishment, and her appetite was unaffected.

The catamenial period was completed by the 13th of October; the irritation of the bladder was more moderate, but the discharge from it was profuse, and always mixed with a great proportion of blood, which mostly coagulated with the cooling of the fluid.

The irritability of the bladder and stomach gradually subsided, as also the hæmorrhage, and she was, six weeks after the commencement of the disease, in a convalescent state, but surprisingly emaciated and enervated. After the urine ceased to be tinged with blood, it became very turbid, and deposited a sediment like pus and mucus.

There was not any material alteration in the symptoms, but progressive improvement of health

until the 10th of November, when she was again attacked with bilious vomiting, and her bowels became irregular in their functions, and the excretions were dark-coloured. She likewise complained of a dull pain in the right side, which she said she had experienced occasionally for a considerable length of time previously to her last illness, and that she could feel an enlargement in that side; but as she had not suffered much pain, she never thought it necessary to mention these circumstances. On examination I distinctly felt a tumor in this hypochondrium, projecting beyond the cartilages of the ribs, and I could trace it into the iliac region. Pressure increased the pain, and there was considerable pulsation in the part.

Dr. Haighton visited the patient a few times, and made the strictest inquiry and examination into the symptoms; but confessed that the nature of the tumor, and the cause of the hæmorrhage, were so equivocal, as to render it impossible to form a correct diagnosis. From the last-mentioned symptoms, the liver was supposed to be diseased; alterative doses of mercury were prescribed; the state of the bowels strictly attended to; and a discharge by blistering was established near the diseased part. Under this mode of treatment her health improved; but she continued to feel a dull pain in the tumor, and its bulk and pulsation were not diminished.

On the 17th of May 1811, another attack of hæmorrhage with bilious vomiting came on, exactly similar to the one described, which continued nearly the same length of time, although every endeavour our art could devise was employed: The tumor had evidently increased in size, and the pulsation was more distinct. She gradually recovered from this severe trial, but looked very wan, and was subject to cold perspirations.

April 1812. The bulk of the tumor had augmented considerably, although leeches and repeated blisters had been employed, and the pulsation in it was more distinct; the enlargement could be traced from the margin of the ribs to the lumbar region, and as low as the spine of the ilium; this examination, with the former symptoms, led me to conclude, what I had long expected, that the kidney was the diseased part, and that, in all probability, the affection was of the fungoid kind.

During this interval of exemption from hæmorrhage, her health remained tolerably good, although she complained frequently of pain in the tumor, loins, and along the course of the spine of the ilium.

In June 1812, she complained of pain in the abdomen, attended with distention, and of a numbness of the right thigh and leg. On the 20th of this month, the discharge of blood from the

bladder re-appeared, as did also the bilious vomitings, which, in the course of a week, threatened destruction of life ; but they subsided, and her powers again rallied. In November 1812 ; October 1813 ; February and April 1814 ; January and May 1815, she suffered attacks bearing such affinity with those already described, that I think it needless to relate them ; but I consider it proper to mention, that during the specified times, the tumor enlarged, it continued to pulsate, and was decidedly diminished after each hæmorrhage. Her pulse was always very small, and when she was free from the discharge of blood, she had, even in the coldest weather, profuse cold perspirations.

Dr. Farre, to oblige me, visited the patient, and sanctioned my opinion of the seat of the disease, but did not feel disposed to agree to its having any alliance to fungus hæmatodes, as he imagined this disease not likely to exist such a number of years without destroying life.

*January 4th*, 1816, her abdomen began to enlarge, and there was great pain in the tumor ; she also vomited violently. The pulsation could now be felt as if it were from an artery of considerable size, immediately beneath the parietes of the abdomen, and across the upper part of the abdomen ; and it frequently produced not only to the patient's feelings, but to those who made examination, a thrilling sensation. On the 11th of this month,

she experienced great uneasiness in the hypogastrium; her bladder was extremely irritable, and she had almost constant desire to relieve that organ. So violent were the efforts, that they resembled those produced by a calculus in the bladder, and were accompanied with the sensation of prolapsus uteri. A catheter was introduced, and upwards of a pint of thick bloody fluid was drawn off, which soon produced ease, but only of temporary duration, for in the course of a few hours the symptoms recurred, but she was able to relieve herself; the discharge consisting chiefly of blood. These symptoms continued to distress her more than a week, and the quantity of blood lost was greater than I could have thought possible for a human being to have sustained. The patient was more reduced by this attack than by any of the former; she possessed great fortitude, and her spirits, under the severity of her affliction, were most remarkably good.

Although the discharge of blood had been so profuse, the tumor was not diminished as in the former instances, but seemed to occupy the chief part of the abdomen. There was frequent bilious vomiting, and the discharge from the bladder was thick, turbid urine, frequently mixed with blood; and sometimes she suffered great pain by the passing of coagula, which often occasioned retention of urine. There was great difficulty in keeping the bowels open.

The urine ceased to be charged with blood about the 27th of February, 1816, but it was mostly thick, and occasionally mixed with a fluid similar to cream. After this abdominal enlargement increased, and the tumor and its irregularities could be easily traced. On the 4th of March she had violent rigors, succeeded by heat of the skin, and thirst; and her tongue was very white. The rigors came on two or three times a day, and were always succeeded by extreme heat of the skin, without terminating in perspiration. These symptoms, with frequent bilious vomiting, continued till the 11th. On the 18th her abdomen increased rapidly; pulse 140 in a minute, and extremely small; she was restless, very anxious, and for the first time during her illness, gave up all hope of recovery; to my astonishment she lived till the 25th of March, 1816. During this time the secretion of urine was small in quantity, and her bowels could only be emptied by the aid of enemas.

I fear the history of this case will be thought too prolix, although I have omitted stating the variety of curative means employed, as I am confident none had any effect in arresting the organic disease.

Mr. Webb, Mr. Knight, and Mr. Kingdon, surgeons, were present at the examination of the body after death. On opening the abdomen, the right

kidney which formed the principal part of the disease, seemed to occupy the greatest portion of that cavity. The inferior part of the diseased mass rested in the concavity of the ilium, and the superior pressed closely against the under surface of the large lobe of the liver, and partly beneath the left, compressing the gall-bladder and gall-ducts. In consequence of the magnitude of the tumor, the intestines were greatly displaced, but not diseased. The serous surface of the peritoneum in several parts had a purple tint; also the omentum, and the mesenteric glands were of the same colour, but were not enlarged, nor was their structure changed.

The liver was pale-coloured, but not unhealthy. The spleen much enlarged, and firmer than natural. The pelvic contents, also the thoracic, were particularly healthy.

The kidneys were removed for more minute investigation; the right, with a portion of the liver, which adhered, weighed eleven pounds thirteen ounces; the left twelve ounces. The large one was formed into irregular sized protuberances, with the exception of a small portion, which retained the character of kidney; and the peritoneal surface was greatly condensed.

That part of the tumor which formed its principal bulk, was cut open. It contained a coagu-

lum of blood, not adhering to the sac; which weighed three pounds, and it was composed of concentrated layers, in different states of solidity, similar to what we notice in an aneurism which has formed rapidly. There were also nearly two pints of fluid in the cyst, which appeared like half dissolved blood mixed with pus. The parietes of the sac were produced by a thickened condition of the proper capsule of the kidney and its peritoneal covering. Its internal surface presented a very ragged flocculent appearance, which was found to arise from coagulated lymph, and numerous long delicate blood-vessels, the external coats of which were covered with lymph.

The remaining parts of the disease were tubera of various sizes, some two inches and a half in diameter; they were in that part of the kidney not covered with peritoneum, and they seemed retained by the capsula propria. When this was removed, their arrangement had the lobulated appearance of a recent human placenta; their contents were coagulated blood and lymph, with a most surprising number of long minute blood-vessels coated with lymph, which when freed from the blood had a tomentose appearance.

The large veins were filled with pulpy substance mixed with blood and lymph, which did not adhere to their coats. The abdominal aorta was remarkably small, but the renal arteries were large;



each nearly equal to a moderate sized carotid. From the trunk of this vessel coarse injection was thrown in, which afforded an opportunity of tracing its distributions, and also of ascertaining those branches which poured their blood into the sac. On dissection it was found that the trunk of the artery divided, as it generally does, into two branches; but they were each as large as the trunk from which they originated; one going under and into the diseased part, the other passing immediately beneath the sac of the tumor, and both anastomosing largely. The waxen injection was seen to enter the sac through numerous small open-mouthed arteries, which came from this branch of the renal, and satisfactorily accounted for the repeated hæmorrhages during the patient's life.

The ureter was not much enlarged; when water was injected through it, the fluid entered the cyst which contained the blood. The left kidney possessed only a small portion of its natural structure, the other part being occupied by pulpy tubera, which were rendered red by minute injection.

## APPENDIX

CONTAINING

## TWO CASES OF ANALOGOUS AFFECTIONS,

By WILLIAM LAWRENCE, Esq. F.R.S. &amp;c. &amp;c.

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*CASE I.*

Charles Murdoch, forty-three years old, who had been a soldier, and had always enjoyed perfect health and strength, was received into Saint Bartholomew's Hospital in January, 1816, for a large tumor in the left armpit. He had felt a small kernel there for two years; but it had not caused him the slightest uneasiness or inconvenience; during the last six weeks it had been painful, and increased to the size of a middling orange. It was imbedded in the axilla, raising the pectoral muscle in front, and the latissimus dorsi behind, forming only a small convex prominence between the axillary margins of these muscles. It was firm and tense. In the operation of extirpation which I performed on the 6th of January, the tumor was found to be nearly spherical; to be in contact with the axillary artery and vein, and to be surrounded by a loose and perfectly healthy cellular substance. Its surface, covered by a thin, whitish, and closely adherent capsule, presented some inconsiderable irregularities; the largest of which occupied the

most superficial part of the swelling, and contained a coagulum of blood. The substance was compact and firm, with a light reddish brown tint throughout, and interspersed with small points of blood, so as to convey the idea of considerable vascularity. The texture was nearly homogeneous; a section, however, presented an obscure appearance of division into lobes; and on scraping it, some soft pulpy matter came away on the knife, leaving a firmer substance behind.

The rapid increase and situation of this tumor, together with its occurrence in an individual of such an age, and a constitution apparently so healthy, could not fail to excite suspicions of its nature; and these were so much corroborated by the subsequent examination of its texture, that I expressed to the pupils my strong apprehensions, that the case would end fatally, either from reproduction of disease in the part, or from affection of the internal organs. The wound of the operation, however, went on favourably; not only had it perfectly healed, but the patient's strength was so entirely restored, that he returned to his work on the 18th of February, with a particular injunction to come back to the hospital, if he should again become unwell.

He was re-admitted on the 25th of May, with a large newly formed mass in the axilla, which he had first noticed seven weeks before, about the

size of a walnut; with two or three painful moveable tubercles, situated over the cartilaginous border of the chest on the left side; with a most troublesome cough, and shortness of breath, and considerable general constitutional affection.

The new tumor in the armpit occupied the whole space between the chest, scapula, and pectoral muscles; its surface consisted of irregularly projecting tubercular masses, in the middle of which, the cicatrix of the wound formed a depression.

In a short time, numerous tumors showed themselves in other parts of the body, unattended with pain, insomuch that they were, in a manner, accidentally discovered. A string of tubercles, moveable under the skin, (which was not in the least discoloured,) and as large as walnuts, occupied the inner side of the right thigh; a similar series, rather smaller, appeared on the front and outside of the left; and some others were on the left haunch. Several hard knots, of the size of horse-beans, were found in the skin of the left and back part of the neck; there were at least eight or ten. A greater number of similar knots (from twelve to eighteen,) occupied the left and upper part of the scalp; and there was one in the right frontal region. The tubercles last-mentioned appeared to be in the skin, which was red, and sore when touched by the comb.

The disease on the chest slowly increased in every direction; and underwent no other change, except that the integuments on three or four of the round convex protuberances towards the axilla, assumed a reddish livid hue, with small vessels ramifying over them, and these parts had an elastic feel, as if from a deep-seated fluid.

The cough and dyspnoea, although much quieted and lessened by rest and soothing medicines, were occasionally very troublesome. There was no symptom of disease in any other organ except the lungs; the pulse being regular, the functions of the bowels well performed with the assistance of occasional purgatives, and the abdomen in all parts free from pain on pressure. He died on the 16th July, after less suffering and exhaustion than might have been anticipated.

#### *Dissection.*

The basis of the axillary tumor described a circle of about six inches diameter; it filled the whole cavity down to the ribs, with which it was in close apposition. The surface of the mass was uneven, and rose into large rounded protuberances; and the interior when cut, had a lobulated appearance. It exhibited a mixture of soft white or reddish medullary matter, with a few masses of bloody coagula, and septa of firmer texture. The

axillary vessels, nerves, and muscles, were enveloped in the disease, but did not partake of it.

The femoral tubercles were depositions of similar soft white matter, in the centre of different muscles, of which the texture appeared in other respects perfectly natural.

In the neck and scalp this matter was deposited in the texture of the skin.

The tubercles on the cartilages of the ribs were under the skin, and extended in a small cluster on the internal surface of the abdominal muscles and diaphragm.

The lungs contained myriads of tubercles, scattered over every part of their surface and substance, and varying in size from that of a pin's head, to that of a small apple. The largest were in the lungs themselves; they were white; particularly in contrast with the livid lung, and had a lobular appearance when divided. They consisted of a very loose cellular and vascular tissue, with a soft white matter, marked with small black striæ, and spots of coagulated blood, in colour and consistence very much resembling the brain of the fœtus. This soft substance could with ease be entirely expressed, leaving an empty cell. The thin edges of the pulmonary lobes were fringed

with innumerable small reddish tubercles, and the pleura was, in a large portion of its surface, covered with similar ones not larger than millet seeds.

A series of large tumors occupied the base of the heart, and the posterior mediastinum. These exhibited the medullary structure internally, and the natural texture of the absorbent glands on the outside.

In the muscular substance of the left ventricle of the heart, there were a few small depositions, not larger than peas, without any surrounding inflammation, or other change of structure.

Some small masses of the same kind of soft medullary matter occurred in the liver, and in both kidneys; numerous ones in the coats of the small intestine, that is, on the outer surface of the mucous membrane; and a very large and some smaller in the spleen.

The contents of the cranium were free from disease, nor was any bone affected.

The soft matter was very nearly alike in all the various situations which it occupied. It could be very easily expressed from the cells that contained it; in consistence it was like softened brain; and a portion of it removed and viewed alone,

could not have been distinguished from cerebral substance.

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### *CASE II.*

Having mislaid the notes of the second case, I am not able to give a detailed account of it; but the following outline comprehends the most important particulars.

Richard Smith, aged twenty-two, was admitted into Saint Bartholomew's Hospital, on the 30th of May, for a disease of the testis, which had existed some months.

The swelling equalled in size two fists, had an elongated oval shape; was perfectly uniform in its surface, and firm, but rather elastic to the feel. The cord was enlarged up to the ring, and a considerable tumor could be felt within the abdominal muscles. This patient was in a bad state of health, considerably reduced in flesh, and had a sickly, anxious, and worn appearance, strongly indicating internal disorder.

Before his death, which occurred on the 27th of July, the abdomen had enlarged considerably, and he had suffered great constitutional disturbance; first from an affection of his stomach, accompanied with bilious vomiting, and then from



peritonitis requiring active antiphlogistic treatment.

In the pulpy texture of the original disease, and in the deposition of a similar soft substance in many other parts of the body, this case proved on dissection to be analogous to the foregoing.

Not a vestige of the natural structure of the testis remained. The swelling owed its firmness and uniform exterior to the coats of the gland, which were filled with a soft matter of white, reddish, or brownish colour, traversed by rather firmer cellular partitions. A tumor in the cord, just within the abdominal parietes, had the same structure.

The cavity of the abdomen exhibited slight marks of recent inflammation. The omentum was converted into a congeries of soft tubercles, of the size of grapes, adherent about the pelvis, where they were intermixed with a considerable quantity of recently effused and coagulated blood. These tubercles were of a light and slight red tint, and so soft, that although the body was examined in a few hours after death, and was perfectly fresh, they gave way to the fingers in every direction, in attempting to remove them.

A mass of the same soft matter, as large as a man's head, lay on the spine, behind all the vis-

cera, and also behind the aorta and vena cava. The latter vessel was closed from the termination of venal veins downwards, and the obliteration extended along the primary and external iliac veins.

- At one point the coats of the vena cava had been absorbed, and the pulpy substance of the tumor projected into the tube. This circumstance led me to advert particularly to the spermatic veins, which I believe must have been obliterated, for I could discover only one or two small twigs in the cord.

The cavity of the pelvis was filled by a similar deposition, surrounding the viscera, but not affecting their texture.

There were a few small portions in the liver.

- The lungs were occupied by numerous soft tubercles of various sizes; and the glands at the basis of the heart, and about the division of the trachea, were enlarged to the bulk of small apples. They contained the pulpy matter internally, surrounded by a structure exhibiting the natural appearance of the gland; and some of them had large cells filled with fluid blood.

## EXPLANATION OF THE PLATES.

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*Plate I.* Represents a preparation of the Hernia Cerebri, described in Mr. Stanley's Paper. See page 44.

*Plates II. and III.* Illustrate Mr. Howship's Paper on the Diseases of Bones, and are explained at pages 105 and 106.

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## ERRATUM.

In the List of Members, after the name of Thomas I. Armiger, Esq. for *Surgeon Extraordinary to the Princess Charlotte and Prince Leopold*, read *Surgeon Extraordinary to the Dukes of Kent and Sussex*.



# CONTENTS

OF

## VOL. VIII.—PART II.

---

	Page
XIV. On the Pellagra, a Disease prevailing in Lombardy, By Henry Holland, M.D. F.R.S. . . . .	317
XV. Observations on the Treatment of Syphilis, with an account of several cases of that disease, in which a cure was effected without the use of Mercury. By Thomas Rose, Esq. A.M. of Balliol College, Oxford, Sur- geon to the Saint James's Infirmary, and to the Cold- stream Regiment of Guards . . . . .	349
XVI. Three Cases of Calculi, removed from the Urethra, without the use of Cutting Instruments. By Astley Cooper, Esq. F.R.S. Surgeon to Guy's Hospital . . . . .	427
XVII. Some Cases of Disease of the Heart, with an In- quiry into their Nature and Causes. By J. H. James, Esq. Surgeon to the Exeter Hospital. Communi- cated by Mr. Abernethy . . . . .	434
XVIII. Further Observations on the Ligature of Arteries, to which is added a Case of Popliteal Aneurism, at- tended with some unusual circumstances. By Wil- liam Lawrence, Esq. F.R.S. Professor of Anatomy and Surgery to the Royal College of Surgeons, &c. &c. . . . .	490
XIX. A Case of Extra-Uterine Fœtus, contained in the - Fallopian Tube, with some Observations. By George Langstaff, Esq. . . . .	502

	Page
<b>XX.</b> The History of a Woman who bore a seven months' Fœtus for seven years, was delivered of it per anum, and completely recovered. Communicated by Dr. Albers, of Bremen . . . . .	507
<b>XXI.</b> On the Formation of New Joints. By John Howship, Esq. . . . .	515
<b>XXII.</b> Observations on the Nature of some of the proximate Principles of the Urine; with a few remarks upon the means of preventing those diseases, connected with a morbid state of that fluid. By William Prout, M.D. . . . .	526
<b>XXIII.</b> Observations on the Treatment of the Venereal Disease, without Mercury. By J. G. Guthrie, Esq. Deputy Inspector of Military Hospitals, Surgeon to the Royal Infirmary for Diseases of the Eye, Lecturer on Surgery, &c. . . . .	550
<b>APPENDIX I.</b> Additional Observations on the Case of Mrs. Kershaw. By William Goodlad, Esq. &c. . . . .	582
<b>APPENDIX II.</b> Postscript to Dr. Fergusson's Paper on the Origin and Nature of the Yellow Fever . . . . .	585
<b>APPENDIX III.</b> Additional Particulars on the Preparation of the Extract of Stramonium. By Dr. Marcet . . . . .	594
Reference to the Plates . . . . .	598
List of Donations . . . . .	599
Index . . . . .	613

ON THE  
**P E L L A G R A,**  
A DISEASE PREVAILING IN LOMBARDY.

By HENRY HOLLAND, M.D. F.R.S.

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*Read June 24, 1817.*

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**A** SHORT residence in the north of Italy, at two successive periods, has given me the opportunity of making some observations on the singular variety of disease, which forms the subject of the following paper. The extensive and destructive progress of the Pellagra in Lombardy during the last twenty or thirty years, has rendered it an object of equal interest to the physicians and governments of the country, and has led even to the suggestion of legislative means for controuling the evils which it has inflicted on this portion of Italy. Many of the remarks on the subject which I shall take the liberty of offering to the Society, are founded on my own observations in the hospitals at Milan and elsewhere. The remainder have been furnished me, either by conversation with different Italian

physicians; or by the perusal of two or three of the several treatises, which have been composed upon the pellagra. From the latter I have derived in particular, much of what I shall have to say, as to the locality, progress, and causes of the disease; these being the points, which, for obvious reasons, are least accessible to the observation of the traveller.

The Pellagra has derived its name from an affection of the skin, which is one of the earliest and most conspicuous symptoms of the disorder. Though there has been some controversy on the subject, yet I do not hesitate in classing the disease amongst the Impetigines, and perhaps even a generic distinction under this class might be warranted by the difference between its symptoms, and those of the leprosy or scurvy, to which it seems to be most nearly allied. Alibert, in his valuable work on the Diseases of the Skin, has described it under the name of the Ichthyosis Pellagra\*; but from my own observation of the disorder, I do not feel entirely satisfied with this name or classification. The account I am about to give of its appearances may afford some means of judging as to this point; and I may remark, meanwhile, that the question of nosological arrangement, is one of comparatively small importance, either to the diagnosis or treatment of the malady.

\* Alibert, Description des Maladies de la Peau; page 175.



The pellagra, as an endemic disease, prevails chiefly in the provinces of Lombardy, lying between the Alps and the Po. This country may be briefly described as a vast surface of alluvial plain, little elevated above the sea; but rising on its northern side into chains of hills, which intermediately connect it with the Swiss and Tyrolese Alps. From the long, narrow, and profound lakes among these hills, the numerous rivers issue, which flowing southwards to the Po, and giving their waters into a number of artificial channels for the purposes of irrigation, maintain that extraordinary fertility of soil, for which the plains of Lombardy have long been celebrated. The principal objects of cultivation on these plains, besides the vineyards extensively spread over their surface, are maize, rice, and millet. In some districts, and particularly between the rivers Adda and Ticino, the pastures are extensive, and yield a considerable produce of milk, from which the Parmesan cheeses are made. The hilly country just noticed, on the northern side of Lombardy, is less productive, and cultivated on a more limited scale. The valleys, however, intervening amongst these hills are of great fertility, yield a considerable quantity of grain, and much wine from the numerous vineyards to which they give shelter.

• The district which appears to have suffered most from the ravages of the pellagra, is that which formerly constituted the Duchy of Milan, and par-

ticularly the Alto-Milanese, or that portion of country lying up towards the hills between the Lago Maggiore and the Lago di Como. It was in this part of Lombardy that the disease first became an object of medical attention; and some time elapsed before it was described as appearing in the Venetian provinces, and near the shores of the Adriatic Sea. At the present time it has unhappily been recognized as increasing in every part of Lombardy; as well on the plains, as among the hills which rise on their northern border towards the Alps. I have had the opportunity of observing it also in the province of Friuli, the district which intervenes between the foot of the Carinthian Alps, and the northern shore of the Adriatic Sea.

Before alluding to the probable causes which determine this locality and extension of the disease, it will be desirable to relate the symptoms which characterize it in the most ordinary form of its occurrence; though these, I may remark in the outset, display frequent varieties, and are often complicated with other characters of disease. The pellagra is a malady confined almost exclusively to the lower classes of the people, and chiefly to the peasants, and those occupied in the labours of agriculture. Though there are doubtless exceptions to this statement, yet the facts it includes are so general, as to render it of importance in the history of the disease. The first distinct appearance

of the malady is under a local cutaneous form; preceded, however, occasionally by languor, debility, and other indications of a general cachectic state of body. The local symptoms very generally shew themselves in the first instance, early in the spring, at the period when the mid-day heat is rapidly increasing, and when the peasants are most actively engaged in their labours in the fields. The patient perceives on the back of his hands, on his feet, and sometimes, but more rarely, on other parts of the body exposed to the sun, certain red spots or blotches; which gradually extend themselves, with a slight elevation of the cuticle, and a shining surface, not unlike that of lepra in its early stage. The colour of this eruption is a somewhat more obscure and dusky red than that of erysipelas: it is attended with no other uneasy sensation than a slight pricking or itching, and some tension in the part. After a short continuance in this state, small tubercles are frequently observed to arise on the inflamed surface; the skin almost always becomes dry and scaly, forming rough patches, which are excoriated and divided by furrows and rhagades. Desquamation gradually takes place, which, though it leaves behind a shining, unhealthy surface in the parts affected, yet in the first year of the disease, is rarely followed by a repetition of the appearances just described. Towards the close of the summer, or occasionally still earlier, the skin has resumed nearly its natural appearance; and but that the further progress of the

Chronic is peculiar to every individual of the country, the patient might be led to suppose that the evil was gone by, and that there was no other reason to dread its recurrence. When it returns

As the persons who are affected by the pellenge in this incipient stage, the twenty-fourth of the hospital, I have had few opportunities of observing the complaint thus early in its progress. From the histories I have seen, however, I should remember the description just given of the local eruption; as being accurate in all its particulars. With the local affection are connected, even in the first period of the disease, certain general symptoms, which are important in as much as they indicate the constitutional nature of the malady. Debility of the whole body; vague and irregular pains of the trunk and limbs, but especially following the track of the spine and dorsal muscles; headache, with occasional vertigo; irregular appetite, and general depression of spirits; these are the more ordinary symptoms which attend the early part of its progress. The bowels are for the most part relaxed; and usually continue so in the further course of the disease. There are no febrile symptoms; and in females the menstruation is generally continued without irregularity.

The remission which the patient obtains during the autumn and winter of the first year, is almost universally followed by a recurrence of his symp-

toms in the ensuing spring, under a more severe form, and with much greater disorder of the constitution. The cutaneous disorder is removed, and spreads itself more extensively; though still affecting chiefly the hands, neck, feet, and other exposed parts of the body. The skin becomes callous and deeply furrowed; and large rhagades shew themselves, especially among the articulations of the fingers. From the cases I have seen of the cutaneous affection in this stage, I should speak of it as most resembling the inveterate degree of Psoriasis, or of the *Lepra vulgaris*, with some affinity certainly to the *Ichthyosis*, under which, as I have already mentioned, Alibert has classed it \*. The debility is greatly increased in the second year of the complaint; frequently depriving the patient of all power of pursuing his active labours, and rendering him peculiarly susceptible of all changes of temperature. Partial sweats frequently break out without any obvious cause. All the nervous symptoms of the first year are renewed in more severe degree; there is a general tendency to cramp and spasmodic affections; the mind begins to suffer under the disorder; and the feeling of anxiety and despondence is very strongly marked. I find the symptom of *libido inextinguibilis* noticed by one or

\* As Alibert's plate gives but a very partial view of the appearances of the pellagrous eruption, I have written to the north of Italy, to endeavour to obtain some drawings which may illustrate this part of the disease. Should I succeed in procuring such drawings, I shall not fail to lay them before the Society.

two writers ; but I did not learn this as the result of my own inquiries ; and I am rather disposed to attribute the opinion to the credulity common upon this topic ; or perhaps to a desire of associating the pellagra more closely with the leprosy, as described by ancient writers. The other symptoms already noticed, make progress as the heat of summer advances ; and with greatest rapidity in those patients who are much exposed to the sun. As in the preceding year, they begin to decline towards the middle or end of the autumn ; but the remission, as well of the local affection, as of the general disorder, is much less complete than before, and the patient continues to suffer during the winter from the debility, and other effects consequent upon the disease.

In the third year every symptom is renewed at an earlier period, and in an aggravated degree. The constitutional malady shews itself under a variety of forms ; some of the symptoms having considerable analogy to those of scorbutus ; all of them indicating a general cachexy of habit, and more particularly a lesion of all the voluntary functions. The debility now becomes extreme : the patient is scarcely able to support himself ; and the limbs, besides their feebleness, are affected with pains, which still further impede the power of motion. The diarrhœa continues, and tends of course to augment this debility. Frequently a dysenteric state of the bowels comes on in the latter stages

of the disease. The breath is generally fetid ; and the odour of the matter perspired often extremely offensive. The appetite and digestion are irregular, yet on the whole, perhaps less affected than most of the other functions. Dropsical effusions now frequently come on ; occasionally ascites, but more commonly anasarca. Vertigo, *tinnitus aurium*, and double vision are almost universally concomitants of this stage of the disorder, and all the senses become exceedingly impaired. Some spasmodic affections are very general, and these not unfrequently take a very decided epileptic form.

Connected with these latter symptoms is the effect which the pellagra produces upon the minds of those suffering under the malady, which effect forms one of the most striking circumstances in the history of the disease. The anxiety, watchfulness, and moral depression of the patient are rapidly augmented. In the hospitals appropriated to the reception of such cases, the *Pellagrosi* afford a melancholy spectacle of physical and moral suffering, such as I have rarely had occasion to witness elsewhere. These unhappy objects seem under the influence of an invincible despondency ; they seek to be alone ; scarcely answer the questions put to them ; and often shed tears without any obvious cause. Their faculties and senses become alike impaired ; and the progress of the disease, where it does not carry them off from debility and exhaustion of the vital powers, generally leaves

these insupportable, edgely, and produces acutely  
 mental affections, which terminate eventually in  
 the same state: this is a striking proof of the ter-  
 minacy of the disease. I may mention the fact, that  
 at the time I visited the Lunatic Hospital at Milan,  
 there were very nearly 600 patients of high degree  
 confined there; of which number, some diseases  
 which were Pellagrosi; people brought thither by  
 the terminations of their disorder, either in delirium  
 or mania. From this statement, great is the ade-  
 quate idea of the ravages of the disease, and the  
 mode of its termination. The public hospitals of  
 the country are wholly incompetent to receive the  
 vast number of persons affected with the pellagra;  
 and the greater proportion of these unfortunate  
 people perish in their own habitations, or linger  
 there a wretched spectacle of fatuity and decay.  
 Where debility, as generally happens, is the cause  
 of death, it manifests itself in the latter stage, with  
 the usual concomitants of colliquative diarrhoea,  
 spasmodic affections, and coma; and produces a  
 degree of emaciation, scarcely to be surpassed in  
 any other disease.

The mania consequent upon pellagra is often of  
 a very violent kind, of which I have seen some re-  
 markable instances in the Lunatic Hospital at  
 Milan. Where such affections occur, the progress  
 of the disease appears to be in some degree retard-  
 ed, and the strength less rapidly declines. At-  
 tempts at suicide are frequent among Pellagrosi;



and particularly, it is said, by throwing themselves into the water. Strambi has thought it worth while to characterize this tendency by the name of Hydro-mania.

Though for the sake of brevity, I have described this train of symptoms as going on from the third year, yet I may remark that the pellagra is generally of longer duration; and that other intermissions usually occur in its progress, giving the patient a certain relief in the degree of his sufferings, though little hope as to the event of the disease. In some instances the cutaneous affection forms the principal indication of the complaint for several successive years; being renewed every spring, and disappearing again in the autumn. In other cases, where it has been found possible to remove the patient to a new situation and mode of life, the disease is still further arrested in its progress. It rarely happens, however, that these means can be practically adopted; and the constitutional malady is generally so far established in the third or fourth year, that little hope remains of benefiting the patient, either by medicine, or change in the mode of life.

I cannot learn that morbid dissections have thrown any light on the pathology of this disease. In some patients the liver, in others the spleen, have been found enlarged and indurated: marks of disease are also occasionally seen in the intestines

and mesenteric glands, but these appearances are by no means constant ; and may more reasonably be considered as effects, than as causes of the malady.

I have already stated the fact, that the pellagra is almost exclusively confined to the lower classes, and chiefly to the peasants who cultivate the soil ; the disease being rarely seen in the cities of Lombardy, except in the instance of patients who have been brought thither from the country. I may now add to these facts, that persons of each sex and of every age, are liable to be affected by it ; and that the hereditary tendency of the disorder is proved by the circumstance of the symptoms frequently appearing in infants at the earliest period of life. This fact is particularly noticed to me by my friend Dr. Sacco of Milan, who in his frequent journeys through the country, as Director of the Vaccine Establishment in this part of Italy, has had the best opportunities of observation on the subject. The authors who have written on pellagra, as far as I have had the opportunity of seeing them, all concur as to this point, and cite the numerous instances in which the disease continues in families, with an evident predisposition derived from parents who have suffered under it. The symptoms of the disorder, as it appears in infants, are not materially different from those attending it in more advanced life. The cutaneous affection of the hands, arms, and feet, is that which first shews itself ; renewed and augmented in succes-

sive years, and attended with the various symptoms which indicate a cachectic state of the body, and which in the greater number of instances have a fatal termination.

The question whether the pellagra be contagious or otherwise, has of course attracted the attention of all, who have had opportunities of observing the disease. This point, as I believe, on the best authority, has been decidedly settled in the negative. Setting aside particular instances, the general facts may be mentioned, that the disease is almost exclusively confined to the lower classes ; that of people living together in the same habitation, some have the disorder, others not ; and that in the case of married people, it frequently happens that the husband or the wife is pellagrous, while the other remains wholly unaffected.

From the preceding history of pellagra, in its ordinary form of occurrence, it will be seen that the disease has in some points a certain degree of affinity to the leprosy of the middle and early ages ; and this relation has been noticed by most of the authors who have written upon it. The differences, however, in other points are so distinctly marked, as not to admit of the diseases being classified under the same name ; and this remark may be further applied to the scurvy, with which the pellagra is connected by several common symptoms. By some authors indeed, it has been described under

the name of the *scorbutus alpinus*; but the greater number have considered it (and apparently with more reason) as a separate disease; though occasionally complicated with the genuine scurvy, which prevails as a frequent disorder in the same districts of country. Titius, one of the writers upon the pellagra, has defined it *Erysipelas, periodicum, nervosum, chronicum*; taking as the basis of this definition, the appearance of the eruption as it first occurs on the skin\*. Its after progress, however, and the concomitant constitutional symptoms, are so different from those of erysipelas, in the common understanding of the term, that it would be difficult to admit such a definition, as giving the nosological arrangement of the disease.

With regard to the origin and causes of this singular endemic malady, though a good deal has been written both by Italian and German physicians, yet I do not find any thing which can be regarded as perfectly decisive or satisfactory. The antiquity of the pellagra has been, in particular, a subject of doubt and controversy. Moscati, a Milanese of considerable eminence in science, has stated it as his opinion, that the disease has not been known in Lombardy more than fifty years; and other writers have held the same belief on the subject. A greater antiquity is assigned to it by

\* Salom. Constant. Titii Oratio de Pellagræ Pathologia. Viteberg, 1792.

Strambi, who being appointed by Joseph II. the director of a hospital established at Legnano, near Milan, for the reception of pellagrosi, had the best opportunities of making himself acquainted with the disease. In his Treatises on the pellagra, published in three successive years, from 1784 to 1787 \*, he mentions the fact of his having seen many pellagrosi in the hospital, who gave him distinct assurances of their fathers and grandfathers having had the disorder ; and from some particular instances, he thinks himself entitled to believe that the pellagra must have been known in Lombardy at least sixty or seventy years before the time when he wrote. Francisco Frapolli, physician to the hospital of Milan, who published a short description of the disease in 1771 †, contends also for its antiquity ; and supposes it possible that it may be the same disorder as one called *Pellarella*, which is casually noticed among the records of the Milan Hospital for the year 1578. This supposition, however, stands without any other proof than the bare analogy of name ; and on the whole there is sufficient ground for concluding, from the silence of all preceding Italian medical writers as to this disease, that it cannot have existed under

\* De Pellagra Observationes, quas in Regio Pellagrosorum Nosocomio collegit Caietanus Strambio, Regius ejusdem Director. 1784-89. Mediol.

† Francisci Frapolli, Mediolanensis Nosocomii majoris Medici Animadversiones in Morbum vulgò Pellagram. Mediol. 1771.

any well-defined form for more than a century, perhaps not even for so long a period.

However this may be, it is certain from the concurrent observation of all who have attended to the subject, that the pellagra has been rapidly spreading itself during the last fifty years; and with greatest rapidity during the latter part of this period. At the time when Strambi wrote, in 1784, he calculated that the pellagrosi formed about a twentieth part of the population in the districts principally suffering under the disorder. It now appears that there are districts in the Milanese territory, where the proportion of pellagrosi is one out of five or six in the whole population; and from the intercourse I have had with the medical men in this part of Italy, I am led to believe that the evil is augmenting at this moment in a very alarming degree. I may repeat here the fact I before stated, that the districts thus particularly affected are in the Alto-Milanese, where the country rises towards the Alps, which form its northern boundary. Soler, one of the writers who have treated of the pellagra \*, has proposed a division of the disease into the sicca and humida, founded upon some difference of symptoms, which he believes to exist in the disorder, according as it appears in dry and elevated situations, or on the flat

\* Osservazioni medico-pratiche sulla Pellagra, del Luigi Soler. Venezia, 1791.

and moist surface of the plains. As I do not find, however, that this division or difference of symptoms is recognized by other authors, it is sufficient to mention the opinion, without entering into further details respecting it. At the same time it seems certain that the disease prevails in some districts much more than in others; that it appeared first in the higher parts of the Milanese territory; and that in this tract of country its ravages are still more extensive than in any other part of Lombardy.

The question regarding the causes of the pellagra I have already alluded to, as involved in much obscurity; and though the current opinions on the subject are certainly on the whole the most plausible, yet they must still be admitted to want something to render them satisfactory. In reference to the remote causes, the most important facts in evidence undoubtedly are, the limited period during which the disease appears to have existed in the country; its being confined almost exclusively to the lower classes, and its rare appearance in the towns or cities of Lombardy. These several circumstances may be admitted to prove, that the disease depends upon some present peculiarities in the mode of life of the peasants of this country. The climate is obviously not the cause concerned; since this, as far as it is known, has been unchanged for a much longer period, than that which includes the history of the pellagra; or had it been changed,

would have affected alike both the higher and lower classes of the population. The same objections may be made to the opinion that any circumstances of mere locality are concerned in producing the disease. It may possibly be true that the plains of Lombardy are more frequently and irregularly flooded than formerly, and that the general surface is more marshy and unwholesome; but this does little to explain the causes of a disorder, which is chiefly prevalent in the higher lands, where such changes have not equally taken place.

The point then to which we are almost necessarily conducted, is the mode of life and subsistence among the peasantry of the country. All those with whom I have conversed on the subject, and almost all the writers on the pellagra, concur in assigning this as the principal cause of the disease. Though I have spoken of Lombardy as one of the most fertile portions of Europe, yet to those who consider the little certain relation between mere productiveness of soil, and the prosperity or comforts of the population dwelling upon it; it will not appear very extraordinary that the peasants of this district should be subject to various physical privations, unknown to the people of countries which are much less favoured by nature. The fact unquestionably is, whatever our speculations as to the cause, that the peasants of Lombardy do for the most part live in much wretchedness; both as regards the quantity and quality of their diet, and



the other various comforts of life. It further seems probable, if not certain, that this evil has been progressively augmenting within the last fifty years; partly, perhaps, an effect of the wars which have so often devastated the country by marches and military contributions; partly a consequence of the frequent changes of political state; together with the insecurity, the variable systems of government, and the heavy taxes and imposts attending such changes. To these causes may be added, a decaying state of commerce, and a faulty system of arrangement between the landlords and the cultivators of the soil; all tending to depress agriculture, and to reduce the peasantry at large to a state of much misery and privation.

The ordinary diet of these people consists chiefly of maize, prepared in various ways; of rice, millet, beans, and some other articles of vegetable food. Their bread, which is principally made from maize, is for the most part of bad quality; ill fermented, and not unfrequently deficient in salt. Animal food rarely forms a part of their diet; and though living on a soil which produces wine, their poverty almost precludes the use of it, even when sickness and debility render it most needful. The same condition of poverty is evident in their clothing, in their habitations, and in the want of all the minor necessities and comforts of life. The immediate effect of these privations is obvious in the aspect of squalid wretchedness and emaciation,

which forms so striking a spectacle at the present time throughout the greater part of Lombardy. I say particularly *at the present time*; because whatever may have been the progress of misery among the peasants of this country during the last half century, it appears to have increased in a tenfold ratio, during the last two years; the effect of bad harvests added to the preceding wars and political changes which have distressed this part of Italy.

This general condition of the peasants of Lombardy seems to be the cause to which we may most reasonably attribute the prevalence of the pellagra amongst them. Their bad and deficient diet may be presumed to produce a cachectic habit of body; manifesting itself progressively in the cutaneous eruption, in muscular debility, and in a general lesion of the nervous system; including the senses, and the mental faculties. I am aware, that I am here using very general phrases; but it will be readily admitted, I believe, that the state of our knowledge as to the causes of disease, does not often admit of others more definite; and though I might cite various speculations which the writers on pellagra have adopted, founded chiefly on the doctrines of the humoral pathology, yet I refrain from this, under the conviction that they have added little or nothing to our real knowledge of the subject. The general fact that a deficiency of good nourishment and other means of comfortable subsistence, is capable of producing constitutional

disease, is attested by numerous analogous instances. The scurvy may be mentioned as one closely allied in several respects, though differing from the pellagra, as well in its symptoms, as in the particular nature of the diet, which appears to have effect in producing the disorder. Other forms of disease, more closely akin to the pellagra, I have observed in Iceland; connected apparently with the diet and mode of life of the inhabitants of that island. Some of these I have described in a Thesis, on the diseases prevailing among the Icelanders, published in 1811. Here too it may be remarked, that the peculiarity of diet is of different kind; and that the points of similarity of condition are chiefly such as relate to general privation and want of cleanliness; causes which appear to have more effect in producing the diseases of this class, scurvy perhaps not excepted, than any of those peculiarities of animal or vegetable food, which are usually alleged and insisted upon by medical authors.

The pellagrous habit of body, however produced among the peasants of Lombardy, is certainly continued and extended by the hereditary tendency of the disease. I have already mentioned the fact of its occasionally appearing in infants at the breast; and though this, perhaps, is comparatively rare, yet it seldom happens that the children of pellagrosi escape the disorder as they proceed in life, and are exposed to what appear to be the exciting causes of the complaint. The early occurrence of the

Pellagra, if the disease depends upon bad and deficient diet, might indeed very reasonably be expected. The mother, sickly and emaciated from poverty, is often unable to nurse her offspring; and the substitute for her milk is generally a pulse, prepared from maize and water; the effect of which is very obvious, in disordering the bowels of the infant, impeding nutrition, and preparing the way for future disease. The same circumstances of defective nourishment are continued during childhood, and with similar effect upon the constitution.

Assuming, however, the physical condition of the peasants of Lombardy as the most probable cause of the prevalence of the pellagra in this district, it may still be asked, why the disease does not equally appear in other countries, where the state of the population is not less miserable? Though there be some difficulty in answering this question, yet on the whole it will probably not be thought inconsistent with medical experience, to suppose that one form of hereditary disease may be accidentally produced in a particular district, and afterwards continued and extended under the influence of the same general causes, which produce other, though analogous maladies elsewhere. Or if this reasoning be thought vague or improbable, it may perhaps be better to plead ignorance of the local peculiarity; still not relinquishing the opinion before given as to the general causes of the disease, which can scarcely be doubted, consider-

ing the evidence derived from the different circumstances already described.

I may mention here, that several Italian physicians have conceived the increasing use of maize as an article of food, to be much concerned with the extension of the pellagra in this part of Italy, and have thought it probable that the peculiar nature of the disorder might be derived in a great degree from this particular diet. It is a strong objection to this opinion, that the disease, as far as I know, is not observed in other parts of the south of Europe, where the same diet is as generally in use among the lower classes. I have never seen it in the northern parts of Greece, though here the same grain forms a principal article of food with the peasantry of the country; and though I shall afterwards notice a disease occurring in the Asturias, which has some resemblance to the pellagra, yet with this exception, I do not know of its existence in Spain or Portugal, where the maize is very extensively used. The same objection may be made to the idea suggested by some physicians, that the increasing use of rice in Lombardy has been a principal cause of the disorder. It is true that quotations might be obtained from different medical writers, stating the noxious effects of warm rice, as an article of food, in producing nervous affections, blindness, &c.; but even were we to admit much of this, there would still remain a wide disproportion between the alleged cause, and the

extent of the effects, as they appear in the pellagra of Lombardy. It may further be noticed that the use of rice was common in Italy in former times, as we find from the testimony of Horace and Pliny, without the production, as far as we know, of any malady corresponding to that now under consideration. If the cultivation of rice in Lombardy has any connection with the pellagra, it is probably much less from its effects as an article of food, than from the swampy nature of the districts in which it is most successfully grown. In allusion to this circumstance, however, I have already noticed the fact, which seems to be established, that the pellagra is most frequent in some of the higher parts of Lombardy; and though the unhealthy influence of a marshy surface in this climate, is well understood from experience, yet it would seem that the diseases depending specifically on this cause, are very different in character, from the one I have just been describing.

On the whole, it is certainly to the leprosy or elephantiasis of the middle or dark ages, that we are to look for the nearest resemblance to the pellagra, both in the character and probable causes of the disease. Whatever be the doubt as to the correct application of these terms, and however various the disorders that were admitted into lazarettoes, it is clear that certain diseases were very prevalent in Europe at that period, attended with scaly or tubercular eruptions, or occasionally

with both ; and bringing on great debility, defect of the senses, and other constitutional symptoms. It appears equally probable that these diseases had their origin, and were continued, by the condition of the European nations at the time in question ; when bad governments, imperfect agriculture, and numerous internal wars, had the effect of producing occasional famine and much habitual distress among the lower classes. It is true that we do not find the description of any of these forms of disease exactly corresponding with the Pellagra ; but the analogy is nevertheless sufficiently close, to warrant us in presuming the same general causes, where the circumstances and effects are so far alike.

I must not quit the subject of the causes of the Pellagra, without alluding again to a remarkable fact in the history of the disease ; viz. the first appearance of the symptoms in the spring of the year ; their partial disappearance in the autumn ; their renewal in the ensuing spring ; and the continuance of this alternation for successive years, whenever the disease is protracted thus long, without reaching its latter stages. The generality of this fact, and the further circumstance of the eruption chiefly appearing on those parts of the body which are exposed to the sun, have led some physicians to suppose that *insolation* was the actual cause of the disease. Albera, one of the writers on the Pellagra, describes it in the title of his

work, as *malattia dell'insolato di primavera*, *volgarmente detta la Pellagra*. Frapolli, after stating various arguments in support of this opinion, asks the question "*Nunne satis evidens et unica causa insolatio?*" and proceeds to give a laborious hypothesis, illustrating its mode of action upon the body. It is obvious from his reasoning on the subject, that he does not sufficiently distinguish between remote and exciting causes. It may be admitted as very probable that insolation is one of the exciting causes of the Pellagra, and that in part at least it determines the appearance and violence of the disease during the spring and summer. But it is certain that exposure to the sun cannot produce the disease, or bring it to its termination, when produced; the obvious proof of which is that the same, or a greater exposure, is incurred by the peasants in every part of Italy, without any similar effects resulting from it; to say nothing of the still more extensive negative evidence to this effect derived from other countries. It may further be presumed that insolation is by no means the sole exciting cause, which determines the appearance of the symptoms in the spring. It seems probable that something of this effect is owing to the increased labours of the peasantry at this season; which cause, though it seems slight and ordinary, yet may reasonably be supposed to have some influence, where the disease is already in the habit, and prepared to manifest itself. Perhaps also it might be surmised, that the perio-



dical returns of the Pellagra, during its early stages, depend in part on the natural periodical changes of the body itself, independently of the external causes just alluded to; but this is a topic too extensive, as well as too obscure, to admit of my entering upon it here\*.

With respect to the medical treatment of the Pellagra, I have much less to say than might perhaps be expected from the preceding history of the disease. The truth is, that in a malady, thus extensively prevalent among the lower classes, and depending chiefly, as it would seem, on their diet and mode of life, no ordinary methods of cure can be adopted with a reasonable prospect of success; the evil requiring those more general preventive means, which it is out of the power of medicine to afford. By far the greater proportion of patients affected with Pellagra are unable to obtain admission into the hospital of the country; the number and finances of which are wholly inadequate to the demands from this source. Their poverty equally precludes medical assistance in their own habitations, or the changes in diet, &c. which are essen-

\* It may be noticed that Alibert describes a variety of the disease, which he calls *Ichthyosis, Pellagra orbicularis*, from the desquamation taking place in circular patches; in which the pellagrous eruption does not appear to take place precisely on parts of the body exposed to the sun, and occurs indifferently at any time of the year. It is very likely that such a variety may exist, though it does not happen that I have heard it described.

tial to their relief. Those who obtain admission into the hospitals, generally come there after the disease has already made much progress in the constitution; and even in the cases where benefit has been derived from this change in the mode of life, it is speedily lost again by the necessity of returning to their own houses and former occupations. The only considerable establishment, as far as I know, set on foot expressly for the reception of *Pellagrosi*, was that, before alluded to, at Legnano, in the Milanese territory. It was abolished, however, five years after its institution, by the Emperor Joseph II.; and in lieu of it, a provision was made for receiving a certain number of *Pellagrosi* into each one of the principal hospitals throughout the duchy of Milan; the funds of the former establishment being applied to this object. Only sixty patients could be received into the hospital at Legnano. The present plan of distribution supports a greater number; but nevertheless appears to have done little in mitigating the evil, either by cures actually performed, or by suggesting any more extensive and radical means of obviating the disease. In 1786, the Patriotic Society of Milan proposed a premium for the best treatise on the history, prevention and treatment of the Pellagra; but equally without obtaining any results of the least practical value. It is not a light task to remove causes which affect a whole community of people; and rarely can such object be accomplished by any sudden or artificial means;

even though governments engage themselves in pursuing it.

The actual medical treatment of the cases of Pellagra brought into the hospital, may be very briefly described. A nutritious diet is immediately adopted for the patient, unless contra-indicated by some local affection, and wine and tonic medicines are given with the same view. A decoction of the lichen islandicus is in common use in the hospital of Milan, as a part of this plan of diet. The warm bath is very generally employed at the same time; a favourite remedy among the peasantry afflicted with the Pellagra, probably in consequence of its comparative cheapness; but esteemed also by most of the medical practitioners, who are concerned in treating the disease. Diaphoretics, and especially antimonials, are in considerable use; under the idea of correcting the state of the skin, and getting rid of the morbid humours through this channel. Depletion by blood-letting is very rarely employed, except where some local inflammation happens to occur, or in the mania which sometimes supervenes upon the disease. Attention is of course paid to the bowels; in correcting the diarrhœa, and bringing them as far as possible to a natural state. Anti-scorbutic medicines are occasionally used; but I did not find reason to believe, from the inquiries I made, that they were of much avail. In short, it appears

certain, that mere medicine has done very little for the relief of Pellagra; and Strambi, whom I have before mentioned as the inspector of the hospital at Legnano, frankly confesses that he never saw a case distinctly cured by the remedies that were employed. It is true that Frapolli speaks of numerous cures that have been obtained by the conjoint use of the warm bath, fictions, and sudorific medicines; but this assertion does not seem to have acquired much credit with succeeding physicians; and the general acknowledgment is one of inability and failure.

In the course of this paper, I have already noticed several authors who have written upon the Pellagra during the last half century. To these I may now add the names of Gherardini, Zanetti, Odoardi, Fanzago, and Jansen; the titles of whose respective treatises are given in the subjoined note\*. Those of Fanzago, the professor

\* Della Pellagra Descrizione di Michelle Gherardini. Milano 1780.

Francisci Zanetti, de morbo, vulgo Pellagra, dissertatio. Nov. Act. Nat. Curios. Tom. VI. Norimb. 1778.

D'una specie particolare di Scorbutto; dissertazione di Jacop. Odoardi; Nuova Raccolta d'Opuscoli Scient. &c. Vinezia, 1776.

Memoria sopra la Pellagra del Territorio Padovano, da Francesco Fanzago. Padova, 1789.

of medicine at Padua, published successively in 1789 and 1792, may perhaps be considered the most valuable documents as to the history of the Pellagra. I have not had the opportunity of consulting these works, since I left Italy; but should I be enabled to procure these thence, which I have some expectation of doing, I shall have the honour to present them to the library of the Society.

Before concluding this paper, I may notice briefly the existence of a disease in the Asturias, which has been described by Thiery\*; and which, from its analogy to the Pellagra in many of its symptoms, has been alluded to by several of the writers on the latter disease. The description of Thiery, however, would make it appear, that this malady much more closely resembles the *Lepra Arabum* or elephantiasis; the general relation of which to the Pellagra, I have already had occasion to point out. I am not aware of the peculiar circumstances which produce or maintain this disease in the Asturias; but it is

*Paralleli fra la Pellagra ed alcune malattie, che più lo rassomigliano, del F. Fanzago. Padova, 1792.*

*W. X. Jansen de Pellagra, morbo in Mediolanensi Ducatu Endemio. Lugduni. 1787.*

\* *Observations de Physique et de Médecine, faites en différents Lieux d'Espagne. Par M. Thiery. Paris, 1791.*

not unlikely that they resemble those which have been already mentioned as the probable causes of the Pellagra of Lombardy; and which appear capable of producing several different forms of constitutional disease, attended with cutaneous eruptions.

**OBSERVATIONS**  
ON THE  
**TREATMENT OF SYPHILIS,**  
WITH  
AN ACCOUNT  
OF  
SEVERAL CASES OF THAT DISEASE,  
IN WHICH A CURE WAS EFFECTED WITHOUT THE USE  
OF MERCURY.

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OF BALLIOL COLLEGE, OXFORD; SURGEON TO THE SAINT JAMES'S INFIRMARY, AND TO THE COLDSTREAM REGIMENT OF GUARDS.

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*Read June 24, 1817.*

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**T**HE existence of a numerous class of diseases, whose symptoms bear a close resemblance to those arising from the venereal poison, but which are curable without the exhibition of mercury, has for many years been satisfactorily ascertained, and is confirmed by the repeated experience of every surgeon. To form an accurate diagnosis between these and syphilis, is in many cases extremely perplexing; and the attention which has of late been bestowed on this important subject, has only shewn more clearly, the difficulties in which it is involved.

It unfortunately happens, that, unlike the effects of other morbid poisons, the symptoms of syphilis are not so marked and peculiar in their character, that by them alone the presence of its virus can be ascertained. Precisely similar ones occur in other diseases, and are even, in certain habits, induced by the action of mercury ; and it is only in their history and progress, that any difference is to be detected. These are frequently so confused by the inaccuracy of patients, and other causes, that no reliance can be placed on them, and we shall find in practice, that there are few cases in which the nature of the disease is sufficiently decided, not to admit of some degree of doubt being entertained on the subject. Under such circumstances, we cannot wonder at the confused accounts which we meet with of this disease, and at the vague and discordant opinions which have at all times prevailed respecting it ; nor, whilst its diagnosis rests on such obscure and unsatisfactory grounds, can we expect to find any consistent rules established for its treatment. Two points, however, appear to be generally agreed upon : namely, that syphilis does not admit of a natural cure, and that mercury is the only remedy hitherto known, which has the power of destroying its virus. So fully are these supposed to be established, that, where a disease has been cured without the use of that medicine, and has not afterwards returned, such fact alone, whatever may have been the symptoms,



is regarded as sufficient proof that it was not a case of syphilis.

That mercury, where its action is properly regulated, and kept up for a sufficient time in the system, effectually destroys the venereal virus, is confirmed by the fullest experience. Its utility, both in the local and constitutional forms of the disease, is too obvious to admit of a question; but the absolute necessity for its employment is more difficult of proof, and seems to have been assumed on less satisfactory evidence. It is true the majority of practitioners have concurred in this opinion during a long series of years; it may be said to be founded on the experience of more than three centuries. But this, although a strong argument in its favour, will not justify our yielding an implicit assent to a proposition so general and so important. The notions formerly entertained of this disease are known to have been extremely incorrect, and it should not be forgotten, that the same argument is not less conclusive, as to the necessity of a course of mercury in multitudes of cases which experience has now fully shewn to be even aggravated by its use.

The importance of this question is obvious, not so much in reference to the treatment of syphilis under common circumstances, for the strikingly good effects of mercury will probably not render it advisable in general to give up the use of that re-

medy, but from the change it will produce in our views of the diagnosis of the disease. The distinction which has engaged such a share of attention of late years, and which is evidently so important between syphilis and syphiloid diseases, has been made to depend so much on the former admitting of no cure except by mercury, that if this principle should be found to be erroneous, the difficulties which have attended it will in a great measure be explained. That it is erroneous I shall endeavour to prove, by shewing first, that it is irreconcilable with some general facts, and secondly, that it is contradicted by particular cases.

In venturing to lay before the Society, these objections to a doctrine so long and so universally maintained, I do not presume to state on such limited experience, that no cases of syphilis can occur in which mercury may be essentially necessary. Still less can I be misunderstood to suppose that it is not often highly beneficial, but I believe that our ideas on this subject have been carried beyond the truth, and that from perhaps the occasional necessity, and certainly the general utility of the remedy in such complaints, an unwarrantable inference has been drawn that they never can be cured without it.

First then it appears to me impossible to reconcile many well authenticated facts with such a theory. A few of these I shall briefly enumerate.

1. Other specifics have been occasionally tried in the cure of this disease, at every period since it is considered as having made its first appearance, and the success of some of them has been attested, after ample experience, by men of veracity and of acknowledged abilities. It is highly probable that many of the cases supposed to establish the efficacy of these remedies were not venereal; and, from their uniformly having fallen into disuse, we may take it for granted, that the remedies themselves were not possessed of all the virtues attributed to them; but if no instance of syphilis can be cured without a course of mercury, can we possibly account for a single rational practitioner having been deceived by them? It has been said that the efficacy of these remedies in syphilis has been erroneously inferred from their being serviceable in removing the sequelæ of the disease, the direct effects of mercury and the cachexia syphiloidea; but this is by no means sufficient to explain the accounts given of them, by those who were so prejudiced in their favour, so as to lay aside mercury, and trust to them in every case which they met with. Sarsaparilla, carbonate of ammonia, opium, the different acids, and many other supposed specifics have been tried on extensive scales, and the testimonies in their favour must astonish all who believe a cure without mercury to be impossible.

2. In several parts of Europe, mercury is either not used at all, or administered in such a manner

as we should consider totally inadequate to the cure of the disease.

I shall select only a single instance: in the Fourth Volume of the Transactions of this Society, a curious account will be found by Mr. Fergusson, of the treatment of the venereal disease in Portugal. It appears, that the use of mercury in that complaint is there almost entirely abandoned, and the consequences have not been such, as, according to our ideas, might naturally have been expected. It is reasonable to think, that a considerable part of the cases of which Mr. Fergusson speaks, would not be regarded by cautious practitioners as venereal. In mentioning the effects of the disease on the British soldiers, he states, that "the constitution, while strongly under the influence of mercury, became affected with the secondary symptoms in a proportion that could not have been expected," and some other circumstances which would lead us to believe, that several of the cases must at least have been of a doubtful nature; but the fact itself, that mercury is hardly at all employed in that country for the cure of any such diseases, is certain, not only from Mr. Fergusson's account, but from the observations of the numerous British surgeons who have served there; and when we reflect on the well known contagious properties of the syphilitic virus, we shall find it difficult to comprehend, why, when thus left to itself, it should

not be productive of far more serious mischief\*. If we compare the account of this disease in Portugal, with what Mr. Hunter considered the natural result of its introduction, where the means of cure were not understood, or with the description

\* I had several opportunities in the course of the Peninsular war, of witnessing the little attention paid to this disease in its earlier stages, both by the Portuguese and Spaniards. I was able to trace some of the natives of those countries (who were attached to the commissariat), in perfect health for two or three years, after sores, which I had supposed to be venereal, had been healed without mercury. The use of that remedy had been prevented both by their own unwillingness to have recourse to it, and by the almost constant exposure to the open air, both during the night and day, which the care of their mules required of them. A few similar instances came under my observation amongst our own soldiers, where the use of mercury was interrupted at early periods by movements of the army or other causes, and was not afterwards resumed. I have often wondered, that, in not one of these, any ill effects ensued, but I could only infer, that my opinion of the nature of the disease had been erroneous, although, in the cases to which I allude, it had by no means been hastily formed, and the sores had had every character of true chancres.

A few instances of nodes, and caries of different bones are to be met with in Portugal, as in every part of the world; but they did not appear to me at all more frequent there, than in any other country I have had an opportunity of visiting. I examined some of those objects, but did not chance to meet with a single one, where the history of the disease corresponded with the idea of its being syphilis. It may be remarked, that although mercury is scarcely thought of in that country for the cure of primary sores, or of such cases where its virtues are undoubted, it is often had recourse to, very unmercifully, in those diseases in which its effects are most pernicious.

of its ravages when it is imagined to have first shewn itself at the close of the 15th century, the contrast cannot fail to strike us. In endeavouring to prove that it was taken to the island of Otaheite, by some of the crew of M. Bougainville; and not by that of Captain Wallis, Mr. Hunter remarks, that, "as M. Bougainville arrived at the island ten months after Wallis, there was a sufficient time, if any one of the crew of the latter had been diseased, for the inhabitants of the whole island to have been infected; and the ravages of the disease must have been evident to the crew of Bougainville immediately upon their arrival." The accounts of the destruction occasioned by the venereal disease in Otaheite, appear by subsequent observations to be entirely unfounded; but they are referred to here, because, if the commonly received ideas on the subject are correct, such would certainly be the consequences of that poison being introduced into any country, where the sole antidote to it was either unknown or disregarded; whilst the well authenticated description of its mild effects in Portugal, when not interrupted by mercury, is totally irreconcilable with these ideas. Mr. Carmichael supposes, from the description given by Mr. Fergusson, that the disease which prevails in Portugal, is a phagedenic or sloughing ulcer, differing from the true syphilitic chancre, and in which he has not found mercury to be either necessary or serviceable; but in what manner that kingdom, over-run by every description of foreigners,

has escaped the introduction of syphilis itself, is left entirely to conjecture.

3. Mr. Fergusson mentions in the same paper a fact, which I had also heard from others, that in the German regiments in our service, some surgeons "pertinaciously even officially refused to prescribe mercury in syphilis, asserting that it was not necessary to the cure." "Such alarming conduct," he adds, "as being referable only to the most brutal ignorance, of course met with no quarter." A similar circumstance was communicated to me by the late Dr. Banks, who had served some time in the Mediterranean. He assured me from his own observation, that the surgeon of one of our foreign regiments\* to which he himself was attached, used no mercury for several years in venereal complaints, and believed that secondary symptoms did not occur except where that medicine was employed.

Lastly; I have tried the same system in the Coldstream regiment of Guards during the last year and three quarters, and have certainly succeeded in curing all the ulcers on the parts of generation, which I have met with in that period, with the constitutional symptoms to which they

\* I believe he said the Maltese regiment; but I forget exactly which he named. Dr. Theod. Gordon perfectly recollects the conversation to which I allude.

gave rise, without the exhibition of mercury. I may not be warranted in asserting that many of these were venereal, but undoubtedly a considerable number of them had all the appearances of the primary sores produced by the venereal virus, and arose under circumstances where there had been at least a possibility of that virus having been applied. Admitting that there is nothing so characteristic in a chancre, as to furnish incontrovertible proof of its nature, it will yet be allowed, that there are many symptoms common to such sores, although not entirely peculiar to them, and wherever these are met with there are strong grounds to suspect that they are the effects of the syphilitic virus. In a sore, for instance, appearing shortly after suspicious connection, where there is loss of substance, a want of disposition to granulate, and an indurated margin and base, there is certainly a probability of that poison being present. Amongst a number of cases of such a description, taken indiscriminately, the probability of some being venereal, is materially increased, and must at last approach nearly to a certainty. On this principle, some of the sores here referred to must have been venereal. They were seen also by different surgeons on whose judgment I could rely \*, who agreed in considering many of them as well marked cases

\* They were under the constant superintendence of Mr. Simpson, and were seen by Mr. Brodie, Mr. Bacot, Mr. Worrell, and many others.



of true chancre. The battalion of the Coldstream, in which they occurred, consisted of upwards of a thousand men, who, being stationed in this metropolis, and associating often with the lower orders of prostitutes, were particularly exposed to the risk of infection, and might have been expected, in a much shorter period, to furnish many examples of that disease. This fact is in itself curious, independently of the character of the sores, and we may at least conclude from it, that the cases which absolutely require mercury for their cure, are far more uncommon than any one has hitherto imagined. The peculiar advantages which the surgeon of a regiment has of watching his patients for any period of time he chuses, after their cure, renders the history of those which occurred in the Coldstream Hospital more satisfactory than it could have been in any of our public institutions. The men who had been treated on this system, were examined almost every week for a considerable time after their apparent cure, both that the first approach of constitutional symptoms might be observed, and that any deception from an underhand use of mercury might be guarded against.

Previously to adopting this system, I tried in many instances very short courses of mercury in venereal sores, such as would not generally be considered adequate to the cure of the disease. In many of these a considerable hardness of the cica-

trix was left, which is always regarded as a suspicious circumstance, but no secondary symptoms followed. Two cases, during the year 1814, in which mercury was used for only fourteen days, producing but a very slight effect on the gums, and in each of which the sore had healed with hardness, returned afterwards with bubo : the one in six weeks, and the other in about four months after discontinuing the mercury. Each had a single gland enlarged in his groin, which was dispersed in a few weeks by rest and cold applications, and both have since continued well. Meeting with complete success from this plan of treatment, and satisfied that the ideas I had previously entertained of the disease were erroneous, I ventured to lay aside mercury entirely, with a view of observing for a time the progress of the virus, when not interfered with by that specific. This we have seldom an opportunity of doing, as, from the confidence so universally entertained in it as an antidote to syphilis, few cases of the advanced stages of the disease are met with, in which mercury has not been administered in some form or other. The appearances of the sores were carefully noted, in hopes of determining more accurately, in the first instance, in what cases mercury was absolutely required, and with the view of inquiring afterwards, what quantity of that medicine would be sufficient. The result has been different from what I had expected, and the cure in every

instance \* has been effected without the necessity of having recourse to any mercury whatever. This was begun in the month of June 1815, and has been continued till the end of February in the present year, when the battalion moved to Windsor.

I have also used no mercury in a number of cases of primary sores, which came under my care during the last sixteen months, in the Saint James's Infirmary ; but on these, I place less reliance, as a few of them only could be watched for any time after their cure, and it is possible some of them may have since gone into other hospitals. The same objections apply to the trial which was given to this method in the York Hospital, at Chelsea ; the men having either returned to their regiments, or being discharged the service shortly after their cure. Dr. James Forbes, physician to that hospital, informs me that upwards of sixty cases of ulcers on the penis were cured there, by simple dressings, under the care of Mr. Dease. " In none of them was any local stimulant or escharotic employed, and the only general remedy was an occasional purgative. One only bid defiance to this simple

\* It is not worth mentioning as an exception to this, that two cases of inflamed iris with eruptions, took calomel pills for a short period, and that in two cases of sores, neither of them at all serious ones, I gave a little corrosive sublimate for four or five days, to try its effects in hastening the cure.

management \*, and out of the whole discharged, one only returned with an excoriation on the site of the old chancre, which got well in a very short time. This man had buboes, but they remained well." This plan has been tried pretty extensively by my friend Mr. Whympers, surgeon to the second battalion of the Coldstream, in France, without a single instance of failure during more than a twelvemonth. Mr. Good adopted the same system in the hospital of the second battalion of the third regiment of guards at Windsor, and found it completely to answer. Similar trials have been made in a great many other quarters, I believe with uniform success. Some of these may probably hereafter be communicated to this Society.

Many other general facts might be added to those above enumerated, which are equally inexplicable, if the venereal disease possesses those contagious properties which are usually attributed to it, and is curable only by one specific: with these, however, I shall not occupy the time of the Society, but shall beg leave,

Secondly, to lay before it a few cases of ulcers on the parts of generation, in which no mercury was employed, from which every one can form his own conclusions. It will not be necessary

\* This man was put through a course of mercury in compliance with the opinion of another surgeon, and not from any other cause.

to give a minute description of the treatment adopted. All ideas of specific remedies were entirely laid aside. The patients were usually confined to their beds, and such local applications were employed, as the appearances of the sores seemed to indicate. Aperient medicines, antimony, bark, vitriolic acid, and occasionally sarsaparilla were administered, if from any circumstances they were judged necessary.

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1st. Sores which were not followed by any constitutional affection.

#### *CASE I.*

John Moulsham was admitted into the Coldstream Hospital on the 26th of August, 1815, with a sore of the size of a split pea, where the prepuce joins the corona glandis. The sore was circular, without granulations, with matter adhering to its surface, and with a hard and thickened margin somewhat elevated. He had a similar sore on the outer edge of the prepuce. The sores had been present a fortnight, and came five or six days after suspicious connection.

A sedative lotion, composed of five grains of the extract of hemlock, and the same quantity of opium to an ounce of water, was ordered to be ap-

plied to the sores every two or three hours. On the 31st of August the sores were dressed with Bates's camphorated lotion, and on the 5th of September with the red precipitate ointment. On September 10. The sores were healed, with a great deal of hardness round the cicatrix of the one first described.

September 21. He was dismissed, at which time the hardness had a good deal diminished.

### CASE II.

John Johnson was admitted into the same hospital on the 27th of August, 1815, with a sore as large as a sixpence on the internal prepuce, which had destroyed the margin of the corona glandis. The surface was sloughy; the sore was not very deep; but was attended with a very great degree of induration. It came eight days before his admission, and two days after suspicious connection.

The treatment was the same as in the last case. On the 16th of September the sore was healed with a very hard cicatrix, to which a little mercurial ointment and camphor was applied. He was dismissed on the 25th of September; and on the 12th of November the hardness was found entirely gone.

*CASE III.*

Richard Webb, admitted into the same hospital on the 11th of September, with a large indolent sore on the external part of his prepuce, of fourteen days' duration. It came a few days after suspicious connection.

On the 3d of October the sore was healed, with a very hard and slightly elevated cicatrix. He was dismissed on the 6th.

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*CASE IV.*

James Moore was admitted as above, on the 11th of December, 1815, with a deep foul sore close to the corona glandis, with considerable hardness and thickening of its base and margin. He said it had been present a month, and that it came about a week after suspicious connection. It had occasioned a bubo in his right groin, which had suppurated and burst. He was just returned from a detached duty, and from the acrid discharge of the sore, the prepuce was inflamed and excoriated.

On the 4th of January, 1816, the sore was healed with considerable hardness, and on the 13th the bubo also was healed, and he was dismissed. The

hardness of the cicatrix had somewhat diminished by the use of a little mercurial ointment and camphor, but was still very considerable.

#### CASE V.

The same man was re-admitted on the 21st of February, 1816, with a deep ulcer of the corona glandis of the size of a silver penny, and a smaller one immediately bordering on it. A portion of the glans was destroyed; the sores were highly inflamed, with a dark slough in their centres, and with hard and thickened margins. The whole prepuce was thickened and inflamed, and several small ulcers had formed from the acrid discharge. The sores had been present three weeks, and came a week after suspicious connection.

His general health was good, and the cicatrix of the old sore had nearly lost its hardness.

Equal parts of Bates's camphorated water, and the sedative lotion, were applied to the sores.

February 24. The two sores had run into one. The sloughs had separated.

February 29. The sore was deep, and as large



as a shilling, without any disposition to form granulations.

It was dressed with Bates's camphorated lotion.

March 5. It had become sloughy, and was spreading. The compound tincture of Benzoin was applied.

March 9. A deep slough had separated, and the edges of the sore looked better.

To return to the former lotion.

March 26. The sore was healing favourably.

The red precipitate ointment was applied.

April 16. It was healed, with considerable loss of substance, and much hardness of the cicatrix, and on the 21st he was dismissed.

June 8. His health was perfectly good, but the cicatrix was still very hard.

October 6. The cicatrix was nearly natural.

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#### CASE VI.

Joshua Reeves was admitted on the 24th of

January, 1816, with a foul, irritable sore, having a thickened margin, where the internal prepuce joins the upper part of the corona glandis, to which it had contracted some preternatural adhesions. The sore was of eight days' standing, and came a week after suspicious connection.

On the 24th of February the sore was healed, with considerable thickening and hardness, and on the 28th he was dismissed.

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*CASE VII.*

Thomas Benton was admitted on the 8th of June, 1816, with a sore which had eroded underneath the frænum, and had the common appearances of a chancre in that situation. There was considerable induration of the frænum, and margins of the ulcer. He said it had been present only a day or two, and arose from a suspicious connection a week before.

The frænum was destroyed by a ligature, and a solution of opium and hemlock applied.

June 20. The sore was healed with hardness, and he was dismissed.

June 26. He returned with an inflamed gland

in his left groin, which suppurated ; and burst on the 11th of July. In the beginning of that month the cicatrix of the chancre inflamed and ulcerated. The sore proved tedious, and the hardness around it increased. On the 7th of August both the bubo and this sore were healed ; the latter with a great deal of hardness. He remained in the hospital till the 2d of September, on account of an inflammation of one of the lacunæ immediately within the orifice of the urethra. The hardened cicatrix of the chancre had a good deal diminished by the use of some mercurial ointment and camphor.

October 6. His health had continued good, and the induration of the cicatrix had disappeared.

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#### CASE VIII.

Robert Staunton, a seaman, twenty-three years of age, was admitted into the Saint James's Infirmary on the 13th of November, 1816, with two sores on the internal surface of the prepuce, one on each side of the frænum. The sores were circular, and each about two-tenths of an inch in diameter. They had a dark-coloured matter adhering to their surface, were attended with considerable loss of substance, and shewed no disposition to granulate. Their edges were irregular, and there was a very considerable induration of their margins

and base. The prepuce was inflamed and tense. There was an incipient bubo in his left groin. He observed the sores a few days previous to his admission, and had been exposed to the risk of infection at Portsmouth about a week before.

November 22. The sores had gradually spread, and complete phymosis had come on. I found it necessary to slit up the prepuce, that the sores might be more carefully cleaned; a small artery on the divided surface began to bleed a few hours afterwards, and he lost eight or ten ounces of blood. It was stopt by a ligature.

The sores continued to spread for some time, and proved extremely irritable, occasioning much pain, and a good deal of disturbance of the system. They spread over the whole of the prepuce, and destroyed a small portion of the margin of the corona glandis. On the 20th of January they were healed with a good deal of hardness and thickening, and the bubo was dispersed.

He was dismissed in the end of January, but was seen frequently afterwards, and as late as May the 3rd: the hardness of the cicatrices gradually disappeared, and his general health continued very good.

Several cases occurred of a cluster of ill-conditioned sores over the whole inner surface of the

prepuce, and behind the corona glandis; and also of a circle of small irritable sores, situated on a thickened and contracted ring at the extreme margin of the prepuce. These occasionally produced buboes. It is doubtful with many how far such cases should be regarded as venereal; a chancre being supposed to be, generally, a solitary ulcer. All which I met with of this description healed readily, and were in no instance followed by any constitutional affection.

In one case of phagedenic ulcers the whole of the glans penis was destroyed, and in another, a considerable portion of it. These cases I shall describe, as they were the only ones, in which any degree of permanent deformity was produced. In both there was such disturbance of the system from the moment of their admission, that the use of mercury would have been highly improper. I have several times seen that medicine exhibited under such circumstances\*, and it has always appeared to me to hurry on the ravages it was intended to check. The same remark applies to the early use of bark, wine, and any tonics or stimulants. I am not at all aware whether such sores

\* I have at present a patient under my care in the Saint James's Infirmary, who had used mercury for eight days in such a description of sores. The whole glans was destroyed, and the disease was making rapid progress under that treatment. The greatest benefit was experienced from bleeding and a change of system.

are produced by the syphilitic poison or not. They are seldom followed by secondary symptoms, but this has been accounted for, by the parts contaminated being so rapidly destroyed. They appear at any rate to be occasioned by the application of some morbid matter, and it is not easy to explain, whether the great degree of erythema excited by the local affection, should be attributed to any peculiarity in that matter, or is owing to the peculiar state of constitution of the person infected. Mr. Fergusson gives a case of this nature in which he says, "the infection was communicated by an opera dancer at Lisbon, apparently in perfect health; who continued on the stage for several months afterwards, occasionally infecting others, without any thing extraordinary, as far as he could learn, in the nature of the symptoms \*."

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#### CASE IX.

Thomas Clarke, of a full habit of body, twenty-one years of age, was admitted into the Coldstream Hospital on the 28th of March, 1816, with six or eight deep irritable sores on his internal prepuce. The surface of these was covered with a dark-coloured slough; they had thickened and highly inflamed margins, and discharged a very acrid ichor.

\* Medico-Chirurgical Transactions, Vol. IV. p. 12.

He complained of much headach and thirst ; had a quick pulse and other febrile symptoms. The sores had been present three days, and were first perceived a week after a suspicious connection. There was a chain of enlarged glands in each groin, which he said was of long standing.

He was ordered a brisk dose of jalap and cream of tartar, and afterwards six grains of antimonial powder, with a small quantity of Epsom salts every four hours ; cold saturnine lotion was applied to the parts.

On the following days the febrile symptoms were increased. He had restless nights, frequent cold chills, much headach, and a constant irritable cough. His tongue was covered with a white fur ; his pulse was quick and not easily compressed, and his skin dry and hot. He had much pain in the sores, which were rapidly extending and running into one another ; a dark-coloured inflammation surrounding them, which terminated immediately in gangrene.

He had been freely purged by his medicines.

The cold lotion was laid aside, and the parts were fomented with a decoction of poppy heads.

March 31. The sloughing had extended, and a considerable portion of the centre of the corona

glandis was destroyed. A hæmorrhage took place from it this morning, by which he had lost a pint of blood before I saw him. An artery of some size in the glans was secured by ligature. Equal parts of balsam of sulphur and oil of turpentine were applied to the sore, and the cold lotion was again had recourse to.

April 1. The sloughs had no disposition to separate, and on the body of the glans, anterior to the margin of the sore, several dark-coloured spots had shewn themselves. He had violent burning pain in the glans; his face was flushed; his tongue covered with a brown fur, and his pulse 102.

April 2. He has had two returns of hæmorrhage, but not to a great extent. He is somewhat less feverish, but weaker. The prepuce was slit open; the sore dressed with compound tincture of benzoin, and a fermenting poultice applied. He was allowed beef tea, and ordered a draught of camphor mixture and spirits of ammonia every three hours, and some compound powder of ipecacuanha at night.

April 3. The burning pain was relieved, and there was a good deal of dark-coloured discharge in the poultice. The glans was separated from the corpora cavernosa, but the part which surrounded the urethra was still entire. His pulse was softer, and only 92.



April 5. The sloughs had nearly separated, after the whole glans, and the part of the urethra which passes through it, were destroyed. The sore continued irritable and much disposed to slough, and there was a good deal of fever.

April 13. Healthy granulations have begun to shew themselves. The patient has half a pint of wine, and a generous diet.

May 24. Every thing has gone on very favourably, and the sore has at last healed. The chain of enlarged glans has subsided, and the patient has recovered his health and looks.

This man deserted soon after he was dismissed from the hospital. He was apprehended in a few months, and sent to a foreign corps, at which time he had no appearance of secondary symptoms.

Much benefit would probably have been derived from bleeding on his first admission, which the symptoms strongly indicated.

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#### CASE X.

Ephraim Johnson, aged twenty-nine, was admitted into the Coldstream Hospital on the 27th of May, 1816, with partial phymosis. His pre-

puce was swollen and much inflamed, and there was a most acrid and copious discharge from underneath it, excoriating the neighbouring parts. The whole margin of the corona and the upper surface of the glans were covered with small white vesications. He said he had observed a deep sore on the inner prepuce three days before his admission, and that he was exposed to the risk of infection on the night of the 20th.

He had cold chills, a violent headach, complained of much thirst, and had a hard and quick pulse.

He was bled to the extent of a pint and a half, and ordered a solution of Epsom salts, and three grains of antimonial powder every four hours.

The solution of opium and hemlock was directed to be injected frequently within the prepuce, and to be applied round the penis.

May 28. Had passed a restless night, with much burning pain in the parts; a frequent irritable cough had come on, and his febrile symptoms continued. The prepuce was divided; it was covered with deep irritable sores, having a very acrid discharge, and was much inflamed and thickened. The sores were so numerous as to give it completely a honeycomb appearance.

His bowels had been opened but once ; the blood was slightly cupped.

The bleeding was repeated to twenty ounces, and the medicines ordered to be continued.

May 29. He had less pain in the penis, but the sores were deeper and more numerous, both over the inner membrane of the prepuce, and over the surface of the glans. He had had two stools ; complained less of headach and thirst, and his pulse was softer. The blood had a slight coat of buff. The cough was troublesome.

His medicines were continued, with ten grains of Dover's powder at bed-time, and a blister was applied to his chest.

May 30. His bowels had been freely opened, and the febrile symptoms were milder. The sores had extended, and were become deeper and more sloughy.

May 31. He had suffered much pain in the night, and the sloughing had gone on ; a portion of the glans was destroyed, and it was separated from the right corpus cavernosum. He had still much cough, and some headach.

Compound tincture of benzoin was applied, but gave very severe pain for about half an hour. The

Following lotion was therefore substituted for it, and the penis was covered with linen dipped in decoction of poppies. He was allowed some beef-tea.

**R Extracti opii.**

**comii aa ʒi.**

Liq. Plumbi Acetat. ʒij.

Aq. Fontan. ʒij. M. fiat lotio.

2dâ. quâque horâ partibus affectis applicand.

June 1. He had slept well, and was easier. The sores looked better.

June 4. Had gone on well for the last day or two, and the sores had improved.

June 7. The disposition to slough was quite checked, but the ulcers were very irritable. Complained of pain in his left groin, where a gland had enlarged; was ordered some decoction of bark, with a little tincture of rhubarb, and a nourishing diet.

June 17. The sore was healthy.

July 6. It was healed, but the bubo had increased, and was slowly suppurating.

July 11. The bubo had burst in two places.

July 31. The sores on the groin were healed,

but the glans continued larger than natural. The cicatrix on the penis was thickened. His general health was good ; a mercurial plaster was applied to the groin, to be worn for some weeks, and he was dismissed.

The absorbent glands of the groin were affected in a great many cases, and often suppurated. The abscesses were in general allowed to burst of themselves, and almost all of them healed readily.

A very few exceptions to this were met with. In one case sloughing took place to an alarming extent. This occurred in March, 1816, in a recruit, who was admitted in a bad state of general health, with an open bubo covered by a good deal of diseased integuments. He had been using mercury internally for three weeks previous to his enlisting, on account of some suspicious sores on his penis. The skin forming the margins of the ulcer, was attacked with a dark-coloured inflammation, running immediately into gangrene. The sore in this manner spread rapidly. Sloughing of the cellular membrane on the base of the ulcer, and of some diseased absorbent glands, also took place. There was great constitutional irritation, and intense burning pain. The principal vessels were at last exposed, but the disease fortunately stopt, under the use of a cooling regimen, and of diaphoretic medicines. The sore afterwards healed

very favourably, and the man has since continued well.

Another case of bubo proved troublesome, from the number of absorbent glands which became affected. This case I shall briefly detail.

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#### CASE XI.

John Mabry was admitted into the Coldstream Hospital on the 24th of October, 1815, with a chancre, which came ten days after suspicious connection, and was healed with a great deal of hardness, by means of topical applications, on the 24th of November. On the 1st of that month a gland inflamed in his right groin which suppurated rapidly, and, as it occasioned a great deal of pain, it was opened with the lancet on the 13th of November.

January 2d, 1816. The bubo was not disposed to heal. There were several diseased glands close to each other, and the discharge was confined by discoloured and inflamed integuments. The cuticle had been abraded from the cicatrix of the sore on the penis, which had again formed an ulcer. Part of the diseased skin in the groin was destroyed with strong caustic.

February 7. The sore in the groin had continued troublesome; a cluster of diseased glands formed its base, and there were several sinuses running in different directions in the cellular membrane around them.

The ulcer on the penis had again healed, with less hardness.

March 16. He felt sick and feverish. There were still numerous sinuses communicating with diseased glands in his groin, and the sores had a tendency to slough.

March 20. His febrile symptoms had subsided, and the sinuses were filling up. A sore had extended to the depth of an inch and a half in the midst of a cluster of absorbent glands, close to the pubis, on the inside of the femoral artery. It had begun to look clean.

May 14. The groin had healed. The absorbent glands had subsided, and the hardness of the cicatrix of the sore on the penis had disappeared.

He was dismissed.

2d. Sores which were followed by constitutional symptoms.

1. Papular eruptions.

### CASE XII.

Thomas Campion was admitted into the Coldstream Hospital on the 3d of June, 1815, with a large, but not very deep sore on the edge of the inner membrane of the prepuce. It had no disposition to granulate, and he had an open bubo in each groin. The sore had from his account been present a fortnight, and the buboes rather more than a week. The former was healed on the 14th of June, and on the 24th of that month, after feeling chilly and feverish for two or three days, an eruption of inflamed papulæ, like common lichen, appeared over his body, and about his forehead and neck. On the 28th the febrile symptoms had disappeared; but the eruption was very thick, and his left eye was inflamed. The inflammation did not appear to have extended to the internal tunics.

July 5. His eye was well; the eruption had begun to fade, coming off in scurf. He had taken small doses of Epsom salts, and antimonial powder, since the first attack of the febrile symptoms.



This was omitted, and decoction of bark and acid prescribed.

July 12. The eruption had nearly left him.

The buboes were both healed.

July 21. He was dismissed.

He returned four days afterwards, with violent pains in his limbs, increased at night. His ankles were swelled, and some fresh papulæ had appeared about his face and neck.

By the use of the warm bath and Dover's powder these symptoms were removed. He was again dismissed on the 21st of August, and has continued well since that time.

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### CASE XIII.

John Cartwright was admitted on the 12th of June, 1815, with an indolent sore close to the edge of the frænum, which he said had been present nearly two months. It was healed on the 25th of June, with some hardness and thickening, and he was dismissed.

August 20. He returned, covered with an erup-

about a week before, at which time he had severe pains in his thighs and legs. When admitted, the eruption was general over the face and body, and most thick about the arms and legs. The papulae were small, and here and there filled with an opaque, white, or puriform fluid; some were beginning to go off in scurf.

The eruption continued about two weeks, fresh papulae occasionally appearing, and the eruption subsided in September. Still, nothing remained but a slight stain, and he was discharged.

This man was of a consumptive habit, and has since been frequently a patient with pulmonary complaints. It was observed that several of those who had been affected with sores, were afterwards attacked with disorders in the chest. This, however, only took place in men, who were predisposed to such complaints. Scrophulous enlargements of the absorbent glands, particularly about the neck, were also frequently met with, and the tonsils often increased in size to a great degree. A young drummer who had been scrophulous in childhood, was affected with obstruction of the lachrymal ducts, and a collection of puriform fluid, in both lachrymal sacs, with great enlargement of the tonsils, five months after being cured of a very suspicious sore on the penis. Many of these disorders were no doubt totally unconnected

with the sores which happened to have preceded them; but there was some reason to suspect, that in a few of these cases an excitement was given to diseases, to which there had been a previous tendency, by the effects of the virus on the system.

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#### CASE XIV.

John Dudman was admitted on the 16th of September, 1815, with a sore at the extremity of the prepuce; having thickened edges and some induration. He had also a bubo on his left groin.

The sore was healed in ten days, and the hardness of the cicatrix soon disappeared.

October 16. The bubo had subsided, and he was dismissed.

November 30. He was re-admitted; had felt chilly for several days, and was feverish at night. An eruption of lichen, or large distinct papulæ, had come out on every part of his body. Some of the papulæ were filled with a yellowish lymph or puriform fluid, and where this had oozed out, a thin scab was formed.

December 6. He was quite free from fever. The eruption was beginning to fade, going off in

scarf. He was ordered decoction of narsarium  
and nitrous acid. NOSEY GIVE NEW STONE AND 20000

December 13. His right testicle was enlarged ; the swelling was uniform, and not very hard nor painful. A cold lotion was ordered.

December 26. The eruption had gone off, leaving a depressed stain of a brown colour, where each papula was. The testicle was reduced to its natural size. He was dismissed.

July 28, 1816. The stains left by the lichen were still perceptible.

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### CASE XV.

Thomas Wiles, forty years of age, was admitted into the Coldstream Hospital on the 30th of November, 1815, with a superficial ulcer of some days' standing, on the outer skin of the prepuce, near its extremity. The glans could not be denuded, in consequence of the contracted state of the prepuce. He had been exposed to the risk of infection a short time before the sore appeared. It healed in three weeks ; but the phymosis proving troublesome, the contracted ring at the end of the prepuce was cut off, and the inner membrane slit open. He was dismissed on the 19th of

January, 1816, being able to draw back the skin easily.

May 25, 1816. He was re-admitted. He said he had had an attack of fever in the beginning of February, whilst on furlough in Essex, and after it had continued for some days, an eruption came out on every part of his body. The surgeon who attended him thought at first it was small-pox. It was probably lichen, and the papulæ of a large size. They have large stains, which are slightly depressed, and becoming of a natural colour in their centres. The eruption, from his account, continued very thick about a week, and then went off in scurf.

On his admission he had enlarged absorbent glands about the angles of the lower jaw, was deaf, and had loss of appetite.

A bitter infusion, with a slight purgative, and diluted sulphuric acid, was prescribed.

On the 16th of June, after feeling chilly and feverish for two or three days, he was attacked with inflammation and tumefaction of the uvula and soft palate, extending along the palatine arches, and affecting both tonsils. This was soon followed by numerous aphthous ulcers. The disease extended to the epiglottis, and probably along the mucous membrane lining the glottis and larynx,

producing extreme hoarseness, violent pain under the pomum Adami, and an incessant irritation from collections of ropy mucus in the trachea. He was totally unable even to make an attempt to swallow for some days, and could not lie down from an alarm of suffocation, owing to the copious secretion of mucus. Blood was taken from his arm several times, and large blisters were applied to the throat. The blood was much cupped and covered with a thick coat of buff. As these symptoms subsided, he had an attack of erysipelas of the face and neck, and was exceedingly reduced. He began to recover in the end of June and early part of July, but this was retarded by suppuration of several of the enlarged glands in his neck. These symptoms were probably not at all connected with the sore.

September 10. The abscesses in his neck were healed. He had taken bark and sulphuric acid for the last two months, and his health appeared re-established. The stains left by the eruption were fainter, the central part which was of the natural colour having gradually enlarged. Dismissed.

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#### CASE XVI.

George Atkinson, of a scrophulous habit, twenty-eight years of age, on the 16th of December, 1815, whilst in hospital with pneumonia, was found to be

affected with phymosis, attended with much dark-coloured discharge from under the prepuce. The sore could not be brought into view, but he said it was situated near the frænum; that it had been present nearly a month, and came four days after suspicious connection. He had an open bubo of a fortnight's standing in each groin. The phymosis was so far reduced on the 29d of December, that a deep foul sore was brought into view on the left side of the frænum, of the size of a silver penny, with hard and irregular edges. This was healed with much hardness on the 12th of January, 1816, and on the 27th of that month the buboes were well, and he was dismissed. In the beginning of April, whilst in hospital with pulmonary complaints, he had an attack of lichen. The eruption was similar to that in the former cases, but not so copious. The papulæ went off in scurf; fresh ones appearing from time to time. They left the usual stains.

In the end of the month he was attacked with measles. No fresh papulæ appeared from the period of the rash coming out.

This man had afterwards scrophulous abscesses, in the absorbent glands about the clavicles; with cough, and other symptoms of diseased lungs. These were no doubt quite unconnected with the sore.

*CASE XVII.*

George Peace was admitted on the 21st of February, 1816, with an eruption of lichen over every part of his body. The papulæ were of a large size, very thickly, but equally diffused, and many of them filled with yellowish lymph. They appeared two days before, with pains in his shoulders, but without any distinct febrile symptoms. He had also a dark-coloured inflammation of the integuments covering each shin, a little above the ankles, which came on at the same time with the eruption.

He had had a sore on the internal prepuce in the end of November, 1815, which was cured in about a month, by a lotion he got from a surgeon in the country, without his using any mercury. This sore appeared about a week after suspicious connection, and has left slight thickening of the cicatrix, and a depression from loss of substance.

February 27. More of the papulæ have appeared on his forehead and face, and a great many over the lower extremities. Some matter had formed under the inflamed integuments of his right shin, which was let out. The boundaries of the abscess were not well defined. A probe could be passed to the periosteum, but the bone was not exposed.



He has been in the warm bath, and has been well purged.

February 29. Fresh papulæ have continued to appear, and others have gone off in scurf. There was a zone of enlarged vessels round the cornea in each eye, but no irregularity of the iris.

Leeches were directed to be applied to the lower eyelids daily, and the opening medicines to be repeated.

March 2. The inflammation of the eyes was less.

March 13. The eruption was fading. The eyes were quite well.

He was ordered some decoction of bark and acid.

March 24. The eruption continued to fade, leaving only the usual stains. The sore on the skin was not healed.

April 21. His leg was well, and nothing remained but the stains of the eruption. He was dismissed.

August 23. The brown stains have been gene-

any getting fainter, and are not now very perceptible.

of boundaries of the eye, and the eye itself.

### CASE XVIII.

Thomas Robins, twenty-eight years of age, was admitted on the 29th of June, 1816, with occasional pains in his shin-bones and knees, increased when he was warm in bed, but not so severe as to prevent sleep; a very copious eruption of lichen in large papulæ over every part of his body, and inflammation of both irides. There was a deep zone of vessels round the corneæ; the pupils were irregular; and one or two large drops of lymph were effused in each iris on the margin of the pupil.

He said the pains in his limbs had been present about a month; that the eruption appeared about a week, and the inflammation of his eyes only three days previous to his admission; that he had had a similar eruption, though not nearly so copious, about three months before; and there were some stains on his forehead, which might be the remains of that attack.

He was a little hoarse, and had been so at different times during the winter; his tongue was much furred, but his general health was little affected.

He had a chronic enlargement of some absorbent glands in each groin, and a considerably thickened cicatrix of a sore at the root of the penis. From his account, the sore had appeared about a year before; he thought it was a chancre, and cured it in about three weeks by means of some blue vitriol, without taking any mercury. The enlarged glands had been present about six months; and as he was confused in his story, it is not improbable, the sore occurred at the same time.

He was ordered a brisk purgative, and afterwards a pill composed of two grains of calomel and half a grain of opium, to be taken three times a day.

July 8. The gums were affected. The inflammation of the eyes was subsiding, and the drops of lymph were nearly absorbed. The eruption was beginning to fade. Extract of belladonna was applied to the eyebrows, and the medicines continued.

July 6. The zone of red vessels had entirely disappeared. The pupils were acted on by the belladonna, and the adhesions of the irides were elongating. His mouth was very sore; he has taken the pills for eight days.

Some opening medicine was ordered, and the pills left off.

July 11. The eruption was nearly gone, leaving the usual stain. His gums were much better, and the pupils were nearly circular, except when fully under the influence of belladonna.

July 29. He was dismissed, after being a few times in the warm bath.

The adhesions between the margin of the iris and capsule of the lens, continued to be visible, at two or three points in each eye for some time; but by the 6th of October they were entirely absorbed, and no traces of the disease were left. The stains from the lichen were still very distinct.

He had afterwards over his shoulders and buttocks, and at one time on the soles of his feet, a few small vesicles, which came in clusters on a thickened and elevated patch of skin. They soon filled with a puriform fluid, and when they burst, left a thin scab. The thickened integument was of a dark-red colour, of an irregular form, and in general about an inch in its longest diameter. It continued for a long time, but produced no effect on his general health.

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#### CASE XIX.

Elizabeth Payne, about twenty years of age, was

admitted into the Saint James's Infirmary, on the 26th of October, 1816, with ardor urinæ, purulent discharge from the vagina, and two or three superficial sores, with slightly thickened edges, on the inner surface of the vestibulum. She said these symptoms had been present a month.

November 9. She was covered over the face, scalp, and every part of the body and limbs with an eruption of lichen. The papulæ were exceedingly minute, and so thick that not a particle of sound skin could be discovered, particularly about her forehead, which appeared puffed and swelled. Her tonsils were a little enlarged, but she had no pain in swallowing. The eruption began on the 7th; and she had been feverish for a day or two previously, with frequent rigors, headach, pain in her limbs, thirst, loss of appetite and restlessness. The symptoms were still present; her tongue was white, and her pulse about 120. The discharge from the vagina continued, but the sores were healed. Had taken small doses of salts and antimony for two days, which she was directed to continue.

November 23. The eruption continued, with the febrile symptoms. She complained of pain in the balls of the eyes, and over the eyebrows, and more red vessels were apparent on the conjunctiva than natural.

November 26. There was a distinct zone of ves-

sels round each cornea, and the pain over the brow was increased. The eruption had begun to fade about the face, but was still very bright on every part of the body. She continued very feverish, and her countenance was much disfigured.

Saline diaphoretics were prescribed, and she was bled to twelve ounces. Leeches were directed to be applied daily to the lower eyelids.

December 4. The zone of vessels round each cornea was less bright, but the pupils were more irregular, and lymph was effused in the substance of the iris, and on the capsule of the lens. The extract of belladonna had been used to the eyebrows for some days. It was not deemed admissible to defer the use of mercury any longer. She was therefore directed to take two grains of calomel with half a grain of opium in the evening, and to repeat it afterwards twice a day.

The eruption on the face had nearly faded, coming off in scurf; on the body and limbs it was still very bright.

December 10. Her gums were affected, and the inflammation of the eyes were rapidly subsiding.

December 18. Her gums were very sore. The pills have been continued a fortnight. The pupils were irregular; but the eyes were in other respects

well. Her febrile symptoms had subsided, The eruption on the body was fading, leaving behind minute brown stains slightly depressed. She was ordered to omit her pills, to have a solution of belladonna dropped into her eyes, and to take diluted sulphuric acid.

A few fresh papulæ of a larger size came out afterwards; but soon went off.

She used the warm bath occasionally, and in a short time recovered her flesh and looks. On the 29th of January, 1817, she was made an out-patient.

March 26. The stains of the lichen had nearly disappeared, and the adhesions of the iris could no longer be perceived in either of her eyes.

May 6. She has had no relapse\*.

\* I met with a similar form of eruption after a virulent gonorrhœa, uncombined with inflammation of the iris; and I saw a precisely similar case, both in respect to the disease of the skin and eyes, in a woman who was a patient of Mr. Brodie's in St. George's Hospital. This woman said she had been affected with a discharge and ardor urinae for some time, and believed she had also had some sores. An eruption of *rosola annulata* not unfrequently occurs in gonorrhœa, but I believe is to be attributed to the balsam of copaiba, and not to the disease, at least I never saw it except during the use of that remedy. It is sometimes accompanied with a good deal of fever. I saw a case last summer.

Inflammation of the iris frequently occurs along with cutaneous eruptions, and is met with in almost every order and description of those diseases. Like them it is often excited by the venereal virus, under which circumstances it has been supposed that there is something peculiar in the appearances of the diseased membrane. The means of distinguishing between the simple and syphilitic forms of this inflammation have been pointed out by the late Mr. Saunders, and by Dr. Farre; but the diagnosis is not satisfactory. The means of cure are fortunately the same in both. Mercury is equally beneficial in the one as in the other, and is equally certain, if used at an early period \*.

The good effects of that medicine cannot be more beautifully illustrated than in this disease. The deposition and organization of lymph is so rapid, that before the cure was effected by other means, (which it probably always might be) the powers of vision would often be permanently impaired. This is confirmed by the numerous cases of closed pupil and opaque capsule, which are met with from the neglect of the disease.

mer which had created considerable alarm, being mistaken for scarlatina. It was in a young officer of dragoons, who had been affected with scarlatina several years before.

\* This most important fact is clearly explained in the last edition of Mr. Saunders's work, by Dr. Farre.



To prevent any risk of this nature, I had recourse to a little mercury, whenever inflammation of the internal tunics of the eye was decidedly established. In several cases, along with different eruptions, there appeared a tendency to it, but it was checked by antiphlogistic remedies, except in the two last, before any lymph was effused ; and in these the quantity of calomel which was given, could not be supposed to have produced a permanent cure, if they had been really venereal. This they probably were not. The sores in the last case were quite superficial, and the account of the primary symptoms in the other, was very confused.

It appears that most of the papular eruptions followed ulcers which were not very deep, and which healed without much difficulty. Several of them had a thickened, but not a particularly indurated margin. This corresponds with the observations of Mr. Carmichael, to which I shall have occasion to refer afterwards. I could not, however, discover any decidedly uniform character in such sores ; and the 16th case I should have considered as a well-marked instance of chancre. In it the man had pneumonia ; and the excited state of his system, with the local effects of a phymosis, may account for the appearances of the sore.

2. Constitutional Symptoms, differing from Papular Eruptions.

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*CASE XX.*

John Lee was admitted into the Coldstream Hospital, on the 5th of September, 1815, with two foul sores, each of the size of a silver penny, on the internal prepuce, which had all the characters of chancres, and had been present seventeen days.

September 16. A bubo had appeared in his right groin.

October 30. The sores were healed, and the hardness of the prepuce was diminishing. The bubo was dispersed.

November 9. He had rheumatic pains in his shoulders and arms, and a dark mottled appearance of the skin over every part of his body. Some opening medicines were ordered.

November 25. The mottled appearance had begun to fade, and the rheumatism was less severe. Cicatrix of the sores natural.

December 15. The symptoms had disappeared.

*CASE XXI.*

E. Hogg was admitted into the Coldstream Hospital, on the 13th of November, 1815, with a deep ulcer, with hard irregular margin, on the inner membrane of the prepuce. It was of the size of the diameter of a large split pea ; and he had bubo in his right groin. The symptoms were of a few days' standing.

December 16. The sore was healed with a great deal of thickening and hardness. The bubo had suppurated, but the matter was beginning to be absorbed.

January 2d, 1816. A very irritable sore was again formed, from his having rubbed the cuticle off the cicatrix ten days ago. The whole prepuce was inflamed and swollen.

February 7. The sore had again healed. The hardness was like a piece of marble. The bubo had come forward, and had burst and healed. His skin had a dark mottled appearance over every part of his body.

February 28. By the use of a little mercurial ointment and camphor to the cicatrix, the hardness had a good deal diminished ; but was still

very considerable. The mottled skin was as before. He was dismissed.

April 16. The mottled appearance had entirely gone off. The hardness of the cicatrix remained.

September 21. The cicatrix was nearly natural.

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### CASE XXII.

William Carrier was admitted into the Coldstream Hospital, on the 23d of May, 1816, with a deep, foul sore by the edge of the corona glandis, near the frænum, one side of which was destroyed by it. The base and margin were much indurated and thickened, and the discharge was thin and acrid. The sore had been present a fortnight, and came four or five days after suspicious connection.

This sore continued for a long time exceedingly irritable, and was not healed till the 8th of August, and then with considerable hardness. A gland became affected in his left groin a few days after his admission, but was dispersed in about a month.

July 6. He observed some spots on his breast and loins, and in a day or two, his whole body was covered very thick with dark-brown patches, of an irregular form, and a little elevated, larger than the

diameters of split peas, giving a mottled appearance to his skin. A few were visible on his forehead, about the roots of his hair, and behind his ears. The sore at the time this appeared was not giving much disturbance; he was thin, but his health was good.

July 17. He began to take sarsaparilla; the appearance of the eruption had not altered.

August 8. There were still some coppery spots on his forehead, and about the roots of his hair; but those on the body were much fainter.

August 21. The sore had healed nearly a fortnight. The eruption was faint, and his health did not appear to suffer. His medicines were omitted, and he was dismissed.

October 6. A dark-coloured eruption, slightly elevated, had again become more distinct on his back and shoulders.

November 24. His tonsils were enlarged, and looked as if covered with an additional layer of lymph.

February 9, 1817. The same appearance of the tonsils continued. The eruption had disappeared.

February 23. The tonsils were nearly natural.

His health has been uninterruptedly good, since the pain and irritation of the sore subsided.

### CASE XXIII.

William Bowdler, twenty years of age, was admitted into the Saint James's Infirmary, on the 24th of May, 1816, with a deep sloughy chancre of six weeks' standing, which had destroyed a portion of the corona glandis. I gave him five grains of the common mercurial pill twice a day, after he had been in the infirmary for a fortnight; it was continued only for four days. His gums were rendered a little turgid.

June 25. The sore was healed with much hardness, and an enlarged gland which had appeared in each groin a few days after his admission, was dispersed.

An eruption of a coppery colour, in flat spots a little elevated, and not regularly circular, about the size of large split peas, had appeared on his back and shoulders.

July 1. As his health was not suffering, I made him an out-patient.

July 23. He did not return till this day, since

the 1st. - He was covered over every part of the body with a pale coppery eruption, in patches of the size of a silver penny, rough on the surface from slight scurf of the cuticle, but not elevated. His ankles were swollen, and he had pains in his shoulders and limbs, when he walked; but slept well at night. Both tonsils were much enlarged, but not painful. His pulse was 108; his health was good. The cicatrix of the chancre was still very hard.

I ordered him a drachm of powder of sarsaparilla three times a day; but he did not take it with any regularity after the first week.

September 10. He was perfectly free from the eruption. His tonsils were less, but still above their natural size.

May 9th, 1817. This man has been seen occasionally during the winter and spring, and has had no return of his complaints. The hardness of the cicatrix gradually went off.

July, 1817. He returned with some warts on the cicatrix; his health perfectly good.

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#### CASE XXIV.

David Philips was admitted into the Coldstream

Hospital, on the 12th of December, 1815, with a sore having the common appearances of chancre. It was healed with much hardness and thickening on the 13th of January following, and he was dismissed.

April 16. His health has been good, and there has been no appearance of any cutaneous affection, but his hair has come off in large patches, particularly about the back of his head.

July 28. For the last month his hair has begun to grow again as usual, and is now of the natural thickness.

Another case nearly similar to this occurred; whether the symptom was accidental, or connected with the sore, is not easily determined.

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### CASE XXV.

William Simmonds, a corporal, was admitted into the Coldstream Hospital, on the 24th of January, 1816, with a deep, foul, irritable sore, on the right side of the internal membrane of the prepuce, with hard, irregular edges, and considerable thickening. It had been present eight or ten days, and followed a suspicious connection. It had produced a bubo in his right groin, which was



as large as a hen's egg. The sore was not healed till the middle of March, and then with a very hard cicatrix. The bubo also was troublesome; it suppurated, and burst in different points over diseased glands.

March 24. A portion of diseased skin in the groin had sloughed away, and left a clean sore. His right tonsil was a little enlarged, and he had an eruption of pale coppery spots over his shoulders, neck, and forehead. The spots were of an irregular form, and scarcely any where elevated. He had felt feverish and out of sorts previous to the appearance of these symptoms.

April 1. The eruption was more general over his body. His right tonsil was much swollen, and had a great deal of pain in his throat at night. His pulse was above 110. He was ordered a pint of decoction of sarsaparilla, with a dram of extract daily.

May 1. His health was much improved; the eruption had disappeared, and his tonsil was much smaller, and free from pain. The hardness of the cicatrix of the chancre was still very considerable.

His medicines were discontinued, and he was dismissed.

June 1. He was re-admitted, with pains in his

loins and knees, increased at night, and preventing sleep.

July 10. A small tumor of an oblong shape and of the size of a walnut had appeared in the middle of his left leg, immediately between the inner margin of the soleus muscle and the bone. It was close to the latter, and was extremely tender to the touch; but he had no pain or pressure over the anterior surface of the tibia. To use the warm bath every night.

July 12. The pain in the tumor was less. His gums were spongy, as if from the action of mercury, but he denied having taken any medicines not prescribed for him; and he was the first to call the attention to the tenderness of the gums.

A decoction of bark with acid was prescribed.

July 24. The swelling was nearly gone; the pains in his limbs had left him, and his gums were quite well. Has discontinued the warm bath for several days.

July 29. The tumor was quite dispersed, and he appeared in good health. Dismissed.

He was watched very carefully afterwards, lest he should be using any mercurial preparation, but nothing appeared to warrant such a suspicion. On

the 29th of December he was discharged the regiment, and he promised to acquaint me if his disorder returned. I have not since heard of him.

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### CASE XXVI.

Thomas Thelbay was admitted into the Coldstream Hospital, on the 16th of March, 1816, with a small, deep, circular sore, with hard and irregular edges, immediately behind the corona glandis, and two small sores on the outer edge of the prepuce. He had also some degree of phymosis, a purulent discharge from the urethra, and a gland was enlarged to the size of a hazle nut in his right groin.

May 8. The sore behind the corona was beginning to granulate. It had proved very troublesome, several deep sloughs having formed in it at different periods. A pustular eruption had appeared on his body and limbs. The pustules were very small, not much larger than pin's heads, and were on slightly elevated and dark-red bases. His tonsils were a good deal enlarged, especially the left, and there was some ulceration in the back part of the pharynx. The eruption had commenced two days before ; he had some pain in his loins, but no distinct febrile symptoms.

He was ordered to use the warm bath.

May 15. The eruption had extended to his forehead, chin, ears, mouth and neck. His right ankle swelled at night, and he complained of pain in the upper part of the tendo Achillis. Numerous tubercles could be perceived over all the inner part of his right leg. They were situated under the integuments, felt perfectly moveable, and were about half the size of garden peas. His tonsils, and the absorbent glands about the angles of the jaw were much enlarged. He was ordered to repeat the warm bath every other night, and to take a pint of decoction of sarsaparilla daily.

May 20. The conjunctiva of the left eye was very vascular, and a zone of red vessels surrounded the cornea. He had pain in the globe. The eruption was not altered. The sarsaparilla was omitted, and some opening physic prescribed. Six leeches were applied to the lower eye-lid and temple, and a cold lotion was afterwards kept to the eye.

May 26. Three leeches have been applied daily since the 20th, and the inflammation of the eye has entirely subsided. Many of the pustules have burst and formed a thin crust, and fresh ones have continued to come out.

June 1. The eruption covered every part of his

body. The pustules had increased in size; but were still a good deal smaller, and were of a darker colour than small-pox. On the face they were beginning generally to scab. The following medicine was prescribed.

R Infus. Gent. comp. ℥vi.

————Sennæ ℥iss.

Liq. Potassæ ℥ss m. f. mist. cap. ℥iss ter die.

June 8. The eruption had begun to scab on the body. His pulse was quick; he was a good deal reduced, and his ankles swelled when he took exercise.

June 15. A fresh crop of pustules came out on every part of his body, of a much brighter red than the last.

His pulse was nearly 120, but he slept well, and his appetite was good.

He was ordered a pint of decoction of sarsaparilla daily.

July 1. The eruption was nearly gone. It had left dark-brown spots wherever the pustules had been. Those on the legs were of a large size as the pustules there had been situated on broad bases. The tubercles under the skin were much diminished.

His ankles swelled at night.

July 20. He has continued his sarsaparilla with the addition of some extract, and has used a warm salt-water foot bath. His health was much improved; his tonsils continued as large as plover's eggs, but gave no pain. He was dismissed.

August 12. He was re-admitted with febrile symptoms and a redness over the skin; his tonsils were much as before, and there was a mass of enlarged absorbent glands in his neck about the upper part of each mastoid muscle.

August 14. Pustules, not situated as before on inflamed bases, but immediately filling with a puriform fluid, had again come out on his back and shoulders, and a few on his forehead, on the hairy scalp, and about the pubes. On inverting the upper eyelids which were turgid, numerous small ones were discovered on the conjunctiva lining them.

September 6. The eruption had gradually disappeared, and the spots it left were fainter than formerly. Those on his legs were of a dark copper colour, were depressed below the neighbouring skin, and occasionally lighter coloured in their centres. His tonsils were large, but his looks were much improved. He was dismissed after taking bark and acid for a fortnight.

A similar eruption appeared on the 2d of October. It was fainter and with less disturbance than any of the preceding ones, and seemed to shew that the constitution was gradually overcoming the force of the poison. It was entirely gone on the 9th of November. His legs continued to swell for some time, and he had a few ill-conditioned ulcers on the ankles, such as generally occur in cedematous limbs. The eruption did not return afterwards, and his general health gradually improved.

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#### *CASE XXVII.*

John Macdermot, a drummer, sixteen years of age, was admitted into the Coldstream Hospital, on the 28th of June, 1816, with two sores which he said had been present five or six weeks, and came a few days after a suspicious connection. They were of a considerable size, and had the common characters of chancre. They were healed with a good deal of hardness on the 26th of July. He had also a bubo in his right groin which subsided.

July 29. An eruption had come out over his legs and arms, and slightly over his shoulders. It consisted of dark brown spots, not elevated, but a little scurfy on their surface ; varying from the size of a sixpence, to that of the diameter of a large split-

pea. The largest were of the faintest colour. He had also inflammation of the periosteum of the right shin-bone, near its middle. It was a little swollen, and very painful to the touch.

Both his tonsils were swollen, and slightly ulcerated; he complained of noise in his ears when in bed, but he slept well, and his general health was not affected.

He was ordered some opening medicines, an astringent gargle, and a few grains of compound ipecacuanha powder at night.

August 3. His throat was easier, and the periosteum less tender.

He was ordered some bark and acid.

August 23. The node had disappeared, and the eruption was extremely faint. His tonsils were still much enlarged, but the ulceration had healed. They had a lobulated appearance; the lobes resembled the fringed margin of the comb of a cock, but thicker and larger.

He left off his bark, and took twenty-five drops of diluted sulphuric acid three times a day.

September 6. His health continued good: the eruption was fainter, and he was dismissed.



January 20, 1817. The eruption was no longer perceptible, but the tonsils did not assume their natural appearance till towards the end of February.

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### CASE XXVIII.

John Atkinson was admitted into the Coldstream Hospital, on the 4th of July, 1816, with a circumsore on the outer skin of the prepuce, with the common characters of chancre. It was healed with much hardness on the 2d of September.

October 6. Aphthous ulcerations had appeared on both tonsils, unattended with much pain.

October 14. Several whitish patches of thickened cuticle were seen on the insides of his lips, of a few lines diameter, giving the appearance as if a layer of lymph was deposited there. There was an angry ulceration running along the upper margin of the gums, by the fangs of the teeth of the lower jaw. The tonsils also looked as if covered with a coat of ill organized lymph, but the aphthous ulcers had healed. He had a pricking sensation in swallowing, which hardly amounted to pain. These symptoms continued until the end of January, and then gradually disappeared.

Many other cases might be given, differing in

some respects from those above detailed, but I shall only briefly refer to a few of these.

One man had enlarged tonsils, and an eruption of bright flat coppery spots, appearing among the roots of his hair and eyebrows, and on his back and shoulders. These symptoms attacked him about six weeks after a very angry sore, and the eruption continued for more than five months. His hair came off wherever the blotches had been situated. The tonsils did not recover their natural appearance for two months longer. He had much febrile disturbance at different periods, particularly on the first approach of the secondary symptoms.

Another was covered over the breast and back, with a pale coppery eruption in extremely small spots, not exceeding half a line in diameter. Many of these were grouped together into different figures, of circles, horse-shoes, &c. They were scarcely at all elevated. They appeared four months after the primary symptoms, and produced no disturbance whatever of the general health. They continued for nearly four months.

A third had mottled skin, great emaciation, violent pains in his shins and elbows, and œdema of the legs. These followed a most painful spreading chancre, which was as difficult to heal, as any I had met with. They came on at different periods;

the mottled skin about six weeks after the appearance of the sore, and whilst it was still very irritable, and the pains in the limbs in about double that period.

None of these constitutional symptoms proved tedious.

A gentleman had a mottled skin two months after a sore, and, in about ten months more, had psoriasis of the scrotum and penis. The last symptom continued for more than five months; and got well whilst he was using the salt-water bath.

Another had mottled skin and pustules over the scalp, two months after a sore, which began like a pimple, and ulcerated at its apex, healing in about five weeks, and leaving an elevated smooth dark-red cicatrix, tender to the touch. He had afterwards ulceration of both tonsils, which recurred frequently during several months. The ulcers had an irregular margin, and both tonsils had an appearance, as if covered with a thin coat of lymph. They were at times very painful, particularly at night. The cicatrix was more inflamed and painful at the time these symptoms came on. He experienced much relief from having the ulcers in his throat touched daily with a strong solution of lunar caustic. He took only purgative medicines, and the symptoms went off in about seven

months. This case was seen occasionally by Mr. Brodie. I have already trespassed much too far on the time of the Society, and shall therefore offer but a very few concluding remarks.

The impossibility of effecting a cure of syphilis, except by the exhibition of mercury, has for a long period been admitted as an established principle, and has been so generally adopted as a leading characteristic of the disease, that I cannot expect the facts and cases which I have related, to do more than lead to a further investigation of so intricate and important a question. If that principle is erroneous, new views of the subject, of material consequence, will evidently be opened to us; and part of the difficulties which have been met with in distinguishing between syphilis and some other diseases, will naturally be accounted for, by the mistaken grounds on which a distinction has often been looked for, where none in reality existed.

That the diseases which are commonly communicated by sexual intercourse, do not all arise from one peculiar poison, is an opinion which can hardly be doubted. Long before syphilis appeared, some of them were frequently met with, and Mr. Pearson thinks, that, in addition to those formerly known, new forms of disease have occasionally

arisen, "which are succeeded by a regular series of symptoms nearly resembling the progress of *Lues venerea* \*." How far the variety which we meet with, in the symptoms of venereal cases, is to be attributed to different poisons; or how far the symptoms of the same poison may be modified, and altered by constitution, climate, and habits of life, is as yet merely hypothesis. We have seldom an opportunity of tracing different cases to the same source of infection, and of comparing their progress with each other, under such circumstances, to see how nearly they would correspond. Inoculation, if admissible, would throw much light on this interesting question. Mr. Carmichael has attempted to arrange these diseases under distinct heads, and thinks he can point out, satisfactorily, several kinds of venereal sores well characterized, each of which he supposes to arise from a different poison, and to be followed by its peculiar constitutional symptoms. He has found all these curable without mercury except what he calls the syphilitic chancre, and the secondary symptoms which arise from it: viz. the excavated ulcer of the tonsils, the scaly eruption on the skin, and some peculiar affections of the bones. It would certainly be an important improvement in surgery, if such an arrangement could be made, and such a degree of accuracy attained; but the appearances of sores

\* Vide Observations on the effects of various articles of the *Materia Medica* in the cure of *lues venerea*. Second Edition. Introduction, p. 53.

can seldom be relied on, in parts of solid vascular structure, and in the midst of sebaceous glands. Peculiarity of constitution must also be taken into account. I recollect, many years ago, a healthy young man, who was affected with a decidedly sloughing sore on the penis, in consequence of a suspicious connection. It was not attended with any constitutional disturbance, and yielded readily to mercury. He twice afterwards, at a very considerable interval, had a fresh infection, and the sores each time had precisely the same character with the first. This is no uncommon occurrence, and it is not probable, that the sloughing and appearance of the sores arose from the peculiarity of the poison, when it is so easily explained by the effects of the constitution. But although the character of the primary sore, may, like that of any other ulcer, be modified by a variety of causes, it is not easy to suppose that these can also account for the great difference in the secondary symptoms. Can the influence of constitution, alone, for instance, enable the same poison to produce a papular eruption in one individual, and a pustular, an exanthematous, or a scaly eruption in another? This at least does not happen in any other disease arising from a morbid poison; we may hope therefore, although the inquiry is a difficult one, that some useful distinctions with respect to the venereal poisons will in time be made. Mr. Carmichael is no doubt continuing the investigation, and his opportunities of practice are extensive.

I already stated that he considers the true syphilitic chancre, and the symptoms which arise from it, as in every instance absolutely requiring mercury. This appears to me incorrect. I have certainly cured, without that specific, ulcers which had a decidedly marked induration of the margins and bases, by which the syphilitic chancre, according to him, is easily distinguished. It is, also, obvious to every surgeon of experience, that the excavated ulcer of the tonsils, as described by Mr. Hunter, is not, as Mr. Carmichael seems to think, a peculiar symptom of the presence of the syphilitic virus. I have repeatedly seen it, as well as the scaly blotch, in cases where mercury had been freely employed for the primary sores, and in which I considered the virus as eradicated, and both have disappeared under the use of sarsaparilla. It may be added, that the sternum and clavicle, which Mr. Carmichael mentions, as two of the bones most liable to the disease, are by many surgeons not supposed to be ever affected by true syphilis\*.

The cases of which I have given a detail, will be sufficient to shew the common progress of the symptoms, in the diseases which I met with during the course of this inquiry. It may surely be assert-

\* In his most valuable Lectures on this disease, Mr. Pearson stated in describing the bones commonly attacked by syphilis, that the sternum, clavicles and ribs were frequently affected by cachexia syphiloidea; but he added, I think, that he had never seen venereal nodes in them.

ed that, in many of them, the sores had all the appearances usually considered as characteristic of true chancre. Some were probably of a different nature, but the majority, would, I believe, have been submitted to a course of mercury, even by the most cautious practitioners. Without including many slighter ulcerations, and those of which I lost sight, immediately after their cure, I have, during the last two years, treated on the same system more than one hundred and twenty cases, where I have been able to ascertain that my patients were in perfect health for many months afterwards, or where they have returned to me with secondary symptoms, similar to those already described. Upon an average, one out of every three of the sores thus treated, was followed by some form or other of constitutional affection; this was in most instances mild, and sometimes so slight, that it would have escaped notice, if it had not been carefully sought for.

The constitutional symptoms were evidently not such as could be regarded as venereal, if we give credit to the commonly received ideas on the subject. Caries of the bones, and some of the least equivocal symptoms, did not occur. In no instance was there that uniform progress, with unrelenting fury, from one order of symptoms, and parts affected to another, which is considered as an essential characteristic of true syphilis. Even each individual symptom of that disease has been declared by



some to be regularly progressive, and never to be checked except by the influence of mercury. Mr. Abernethy inquired, he tells us, of the best surgeons in London, whether constitutional symptoms of syphilis do ever spontaneously amend? No one decidedly replied in the affirmative; and Mr. Hunter considered the disappearance of any symptom where mercury had not been employed, as a proof of its not being syphilitic.

I have purposely avoided introducing at present any instances of those more aggravated constitutional diseases, which are of such frequent occurrence, where the previous history is confused by the injudicious use of mercury. In these we are often at a loss, whether to attribute the symptoms to a different disease, induced by the remedy, or to consider them as the effects of the original poison, which that remedy had not completely subdued. It is astonishing how widely the opinions of medical men differ respecting these; but amongst cautious practitioners a very small proportion of them is submitted to a course of mercury, in comparison with what would formerly have been supposed to require that treatment.

The cachexia syphiloidea, or pseudo-syphilis, to which a great many of these cases are referred by the surgeons of this country, is often a most obstinate and formidable disease. It was not distinguished from syphilis till of late years, and pro-

hably some genuine case of the latter that has been treated and cured under such a denomination. Mercury, if carried to any extent, produces in it most pernicious effects; indeed the cachexia syphiloidea is rarely met with except where that medicine has been freely employed, which is therefore considered as one of its exciting causes. I should appear from a remark of Dr. Scott, however, that that cause is not alone sufficient to give rise to it. He states, "that during the whole of his residence in India, where mercury is so commonly, so highly, and sometimes so injudiciously given for affections of the liver, he never knew a single instance of this new disease having arisen where syphilis was certainly out of the question."

Like syphilis, the cachexia syphiloidea appears to be produced by some absorbed poison, and frequently follows different sores. I met with a well-marked case of it lately after a very painful and ill-conditioned sore on the finger, and another which followed an ulcer on the lip. It has never been satisfactorily ascertained whether such sores have the power of secreting a matter which can produce the same disease in others.

There seems however no doubt, that in some of its stages the disease itself is contagious. I have known three instances of husbands having communicated it to their wives; and in two of these, I was not able to ascertain that there had been any

sore after marriage, from whence inoculation could have taken place \*. The same remark, with respect to our ignorance of the means of infection, applies to the disease with which infants are frequently affected shortly after birth, characterized by coppery spots, emaciation, and other symptoms, and supposed to be the effect of the virus of syphilis. We commonly find in such cases that one of the parents or the nurse have had some venereal or syphiloid disease at no very distant period; but the precise mode of infection can seldom be ascertained.

The modification which the symptoms of syphilis undergo, from the injudicious use of mercury, so conducted as to fail of effecting a cure, is an inquiry of considerable interest, and would, if properly conducted, throw a great deal of light on the history of the disease. It is now generally admitted that the majority, and certainly by far the most serious diseases of the bones, as well as many other most distressing symptoms which are met with in all these diseases, are to be attributed to the injudicious or excessive use of that remedy. Most lamentable cases of this description are still by no means uncommon; and when we reflect on these, and on the horrible excess in which mercury was universally employed, two or three centuries ago, we shall no longer wonder at the alarm then enter-

\* Two cases of this nature are given by Mr. Abernethy, in his *Essay on Diseases resembling Syphilis*.

stained of the disease, which was assumed to be fatal in itself and was too often regarded so, by the means attempted for its relief. On the subject of all these diseases much further information is wanting, and this can only be obtained by an accurate attention to facts, which their frequent occurrence gives every one an opportunity of observing; and by following our opinions on a careful induction from these, and not on the vague theories which have hitherto so generally been adopted. If new forms of disease have arisen, or if syphilis be itself modified, both which doctrines some are inclined to maintain, these form only stronger arguments for clearing our minds of all preconceived ideas which are not found to bear the test of experience, and carefully investigating the symptoms and treatment of those diseases which now occur. I should be more inclined to suspect, from the extreme contradictions at all times to be discovered in our histories of syphilis, that the descriptions of it have been totally erroneous, even to the very circumstances and period of its origin, than that any such change has taken place.

**THREE CASES**  
**OF**  
**CALCULI,**  
**REMOVED FROM THE URETHRA,**  
**WITHOUT THE USE OF CUTTING INSTRUMENTS.**

**By ASTLEY COOPER, Esq. F.R.S.**

**SURGEON TO GUY'S HOSPITAL.**

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*Read June 24, 1817.*

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**I**N the first volume of the Medico-Chirurgical Transactions, a very interesting paper is given by Mr. Thomas, on the *Dilatation of the Meatus Urinarius*. When I perused that paper, I resolved to take the first opportunity which might occur of employing the same principle in the extraction of a stone from the bladder; and having made the successful issue of a case known by relating it in my lectures, two of my friends, Mr. Wright of Nottingham, and Mr. John Okes of Cambridge, employed the same means, and with similar advantage.

*CASE I.*

Phillis Keen, who had not been able to retain her urine from her last delivery, which was in the summer of 1809, was admitted into Guy's Hospital on May 30, 1810, with symptoms of stone. At twelve o'clock on Thursday, the 21st of June, a piece of sponge was passed into the meatus urinarius, which, on the following day at one o'clock, was withdrawn, and a pair of middle-sized stone forceps were passed into the bladder, and a stone more than one inch long, and three-fourths of an inch wide, was extracted. On the 27th of June she was discharged cured, being free from every symptom of the stone; but the incontinence of urine, when she quitted the hospital, continued as before the operation.

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*CASE II.*

Mr. John Wright, of Nottingham, having heard of the preceding case, performed the operation, and sent me the following letter:

"DEAR SIR,

"I am in hopes that the following case of extraction of a stone from the female, will be acceptable

to you, and beg your acceptance of the calculus. I am, dear Sir,

Yours, &c.

JOHN WRIGHT."

Elizabeth Nutt, a small weakly child, six years of age, had laboured under symptoms of the stone for four years, when she was admitted into the Nottingham General Hospital, on the 28th of April, 1812. The urethra was distended by means of sponge tent, until the 5th of May, when a large stone, weighing an ounce and a half (avardupois) was extracted with a pair of polypus forceps, and the girl left the house free from complaint on the 9th, only four days after the extraction.

*Nottingham, May 12, 1812.*

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I received the following letter from my friend and pupil, Mr. Okes:—

"DEAR SIR,

"Allow me to submit to you the particulars of the extraction of a calculus vesicæ urinariæ after artificial dilatation of the urethra.

I am, dear Sir, with all respect,

Your very obliged and sincere friend,

JOHN OKES."

THE LANCET, LONDON, SATURDAY, JANUARY 10, 1858.

### CASE III.

*Case of extraction of a calculus vesicæ urinariæ, after dilatation by sponge tent, by Mr. John Okes, Member of the Royal College of Surgeons in London, and Surgeon in Cambridge.*

The case here recorded is not offered to your notice on account of its novelty, but as a further confirmation of the dilatability and contractibility of the female urethra. The os uteri, vagina and rectum, are capable of dilatation to a most prodigious extent; and Mr. Thomas, in a case in the first volume of the Medico-Chirurgical Transactions, has demonstrated, that not only may the female urethra be very extensively dilated, but that it will, after such extension, recover its tone, and the patient be left free from incontinence of urine, a circumstance almost invariably the result of an incision through the sphincter vesicæ urinariæ.

In June 1815, a girl about eleven years of age, having a calculus in the urinary bladder, consulted me, and expressed herself willing to submit to any operation which held out a prospect of relief from her dreadful sufferings. It was determined to dilate the urethra by sponge tents, and as she was in good health, no other preparation was necessary than to empty the bowels by a cathartic medicine, previously to the attempt at dilatation. In the



evening after this had been administered, a piece of prepared sponge, with a string affixed to it, as large as could be introduced, was passed into the urethra, and directly afterwards she took forty minims of tinctura opii; she passed a tolerably quiet night, the urine draining away through the sponge. On the following morning, the sponge which was excessively swelled was removed, a larger piece introduced in the same manner as before, and the same dose of tinctura opii was directed. This second tent produced more pain than the first did, but not enough to discourage a perseverance in the plan; the sponge was therefore repeated morning and evening for three successive days, increasing the size of it as much as could be borne, and giving at intervals as much tinctura opii as was necessary to keep down the pain. On the afternoon of the third day, the urethra appeared to be sufficiently dilated to justify the attempt of extracting the calculus, and a pair of forceps were easily passed into the bladder, and the calculus extracted without much difficulty. The difficulty in the extraction of the stone was increased by the forceps having seized it from point to point at its major axis; the parts, however, received no material injury, as only a few drops of blood followed the operation. The child slept comfortably during the night, and only very slight feverish symptoms came on the next day. The treatment common upon such occasions was adopted; the urine flowed involuntarily for three days,

at the end of which period the incontinence ceased, and she has ever since retained her urine perfectly well. The calculus, of which I send you an etching of its natural size, weighed four drachms, and is in circumference at its major axis three inches and three eighths, and at its minor three inches and one eighth, and as the forceps unfortunately seized the stone at its major axis, it may fairly be allowed, that if the thickness of the blades of the forceps be included, the urethra was distended to a circle of three inches and three fourths in circumference. The result of the operation being favourable, even under the disadvantageous circumstance of the stone being seized at its major axis, is an additional argument for the use of distension, and it is proper also to observe, that much advantage was obtained by the use of sponge for dilating the urethra, as it at the same time allowed the urine to drain off, and by that means prevented the irritation which must have taken place if any other tent had been used, which might have prevented the flow of urine from the bladder.

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*Remarks.*

In the adult it will only be necessary to introduce a piece of sponge for twenty-four hours, and a stone of large size may be extracted without any great irritation being excited by it; but in the child the dilatation should be more gradual, as they suffer more from it on account of their greater

irritability. The retention of their urine whilst the sponge is in the urethra also occasions considerable irritation, and it will be proper to have a groove made in the side of the sponge, to allow of the gradual escape of the urine, or, as my friend Mr. C. Hutchinson suggested, a catheter might be placed in the center of the sponge.

A great advantage will result from this mode of operation, if it should be found that in the majority of cases the urine is retained after the extraction of the stone, as the great objection to the use of the gorget or knife in the operation in the female, is the loss of power of retention which follows it, leaving the patient offensive to herself and friends, and the subject of continued excoriation. It is true, Mr. Hey has suggested the introduction of a sponge into the vagina, in the hope, that by the constant application of the surfaces of the wound to each other, they might be made to unite, and when cutting instruments are employed, such a trial will be proper.

Another advantage will be derived from this plan, *viz.* that it may be employed as soon as a small stone is discovered in the bladder, when it can be extracted with great ease, and at a time that a more dangerous, important, and painful operation would be hardly proposed.

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**SOME CASES**  
OF  
**DISEASE OF THE HEART,**  
WITH  
AN INQUIRY  
INTO THEIR NATURE AND CAUSES.

By J. H. JAMES, Esq.

SURGEON TO THE EXETER HOSPITAL.

COMMUNICATED BY

Mr. ABERNETHY.

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*Read June 10, 1817.*

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**ALTHOUGH** much labour has of late years been bestowed on the investigation of diseases of the heart, it must be confessed that our knowledge of the subject is still very imperfect; nor indeed can this be a matter of surprise, since the physiology of the vascular system itself, is, after all, but very inadequately understood. It may appear a bold assertion to hazard, that we are far from having a correct knowledge of the functions of the various parts of the circulatory apparatus; but it is one which I feel no hesitation in making, and in ex-

tending also, to the pathology of this system. I feel myself accordingly justified in offering a few observations on the subject.

In the writings of the older authors, there are numerous cases recorded, of examinations of persons who have died with disease of the heart; many of them highly valuable, but few complete, inasmuch as the views entertained of this, as well as other subjects, were different in many respects from those of their successors; perhaps I may be warranted in saying, because they were less enlightened; and also, because they have in many instances omitted to give us a sufficiently detailed account of the appearance of other organs besides those principally concerned. In the works of several modern authors, there are cases related of much more value, from the greater care and fidelity of the examinations, and the more instructive views which they present; an addition to our collection of facts in this department, is still, however, very desirable; and I am, therefore, induced to lay the following cases before the Society. They are selected from among those which I had an opportunity of observing, particularly during the latter part of the period that I passed in attending Saint Bartholomew's Hospital, when I had very extensive opportunities of seeing the morbid appearances after death, as well as observing the symptoms before it; and my attention to this class of diseases

was particularly excited, from the frequency with which these cases occurred.

From the facts which I observed, I was led to form some opinions respecting them, which are in many points, I believe, peculiar; and although in the interval which has since elapsed, I have not been fortunate enough to have it in my power fully to confirm them, yet I have not seen sufficient cause to reject them as erroneous.

Whenever mechanical obstruction has been found to exist at either of the orifices leading from the cavities of the heart, some of these cavities have been found to be enlarged in size, and very generally strengthened in structure; one or more may have undergone this alteration, but most commonly, we find that cavity altered in particular, before which the obstructing cause is placed. Every one, therefore, has agreed to consider this as one of the chief causes of aneurism of the heart. But if contraction of the aorta at a distance from the heart exists, enlargement of that viscus, it is supposed, may equally take place; or this, indeed, may happen if obstruction be situated in any other part of the vascular system. Of such cases there are some on record\*; but a very few where there

\* Morgagni, Book II, Letter XVIII, Art. 2.

Corvisart, Obs. XXIV, p. 117.

These are the only cases of this kind I find in two works very copious in cases of diseased heart.

is positive evidence of the fact ; and I am therefore particularly induced, in the first place, to offer the three following. In the first, there was evidence of obstruction in the course of the vascular system, and the heart was enlarged, but there was also obstruction at the aortic orifice ; nevertheless I am inclined to believe that this latter was consecutive. In the second, there was evidence of a contracted state of the aorta, with enlargement of the heart. In the third, there appears to have been obliteration of the vena cava, likewise causing enlargement of the heart. Independently of these points, there are some interesting circumstances belonging to these cases.

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### *CASE I.*

On the 31st of June 1812, I saw the subject of the following observation, for the first time. He was a lad, eighteen years of age ; his name John Day. He was admitted a patient of Saint Bartholomew's Hospital, on account of a strain in the arm, and at first complained of no other ailment. At the time I saw him, he was in an apparently dying state ; there was an extreme degree of restlessness, anxiety and feebleness, and he was exceedingly emaciated. The pulse at the wrist frequent, but feeble ; at the lower part of the abdomen, however, on merely placing the fingers on the surface (which was not very distant from the ver-

tebræ on account of the emaciation) a strong, large pulsation could be felt; it certainly did not feel altogether like the heavy beat of an old aneurism, but yet it was so large and strong, when compared with the pulsations elsewhere, that it appeared very probable, that it was one, and this I believe was the general opinion at the time.

On the inside of the right knee, there was a patch about twice the size of a crown piece, of a bright red colour, but the surface was not elevated, there was no secretion from it, and it occasioned no pain. The state of the limb was in other respects very peculiar: it felt much colder to the touch than the other, and there was no pulsation in the arteries. This condition of the limb was supposed to be connected with the aneurism felt at the bottom of the abdomen,

All I could learn of his previous history was, that his complaints had been of a very anomalous nature; but he was supposed to have had disease of his vascular system, not only from the pulsations in the abdomen, but from their general fulness and strength elsewhere in the arteries, as well as in the heart; the former being described as having a kind of incompressible firmness. The secretion of urine was much altered, being of the appearance of decoction of bark; and he had pain in his loins; besides this he had considerable sickness and vomiting, which were referred to the affection of his kidneys.



The following day, July 1st, he died, and his body was examined.

The *Thorax* contained a very small quantity of fluid; the lungs appeared pretty healthy: on one part of the surface, however, there was a red blush, but no effusion of lymph or other trace of inflammation. The pericardium was rather thicker than usual, and in its cavity was contained a small quantity of reddish fluid.

The heart was larger than natural, the cavities being considerably augmented in size; but the parietes were thinner than usual, particularly on the right side, and somewhat perhaps on the left. The muscular fibres were flabby. The cavity of the left ventricle was the most capacious. The valves of the aorta were covered with excrescences to a degree that must latterly have considerably impeded the exit of the blood, and also, by preventing them from performing their office properly, have occasioned regurgitation. There were several holes in the valves in the midst of these excrescences, which probably proceeded from ulceration; and beneath the valves, there was a small sac formed containing pus, which projected into the right ventricle. There were a few specks of disease in the thoracic aorta, but there was no thickening, and it appeared, if any thing, smaller than common. In the abdomen it certainly appeared to be so, and so were the branches proceeding from it: and

there was nothing in the slightest degree resembling an aneurismal tumor.

The state of the right lower extremity led us to examine the artery on this side, and just below Poupart's ligament we found a plug of coagulum, which led to an excrescence, growing from the inner coat of the vessel, precisely similar to those found on the aortic valves. It also blocked up the profunda, so that no passage could be allowed through either of these vesicles. They were however completely open to within a very short distance from this excrescence, where one or two small vesicles were given off. The trunks of these two arteries, (the femoral and profunda) although, in common with others elsewhere, they were considerably smaller than usual, yet could hardly be considered as much contracted in particular.

*Abdomen.* The stomach was of a dirty unhealthy hue, with a blush of dusky red about the cardia; the intestines appeared unhealthy and rather turgid with blood; there was not however any appearance of disease distinctly marked. The liver was not much altered from its natural appearance. The spleen was turgid.

The kidneys were larger and much diseased.

The head was opened, and a little serous effusion was found.

In this case, although I did not myself feel the pulsation of the heart and arteries, when they were full, strong, and incompressible, yet I cannot doubt the authority from which I received this information; and the pulse at the wrist having been feeble a few hours before death can be considered no contradiction, for at that time the pulsations in the abdomen were remarkably large and strong.

As there was no aneurism there; as there was no increase of the size of the arteries elsewhere, but the contrary, how are we to account for the large and full pulsations? To me there seems no other mode, than by supposing, that there was in some part of the vascular system an obstruction afforded, which caused the large arteries to be distended, as where a ligature is applied upon a vessel. In one place there was positive evidence in this case of such obstruction; to this I shall add the conjecture, that the obstacle elsewhere originated in the minute vessels; but this will be a subject for future consideration. What tends, however, to render the conjecture probable in the present instance, is the peculiar state of the right limb. If the circulation be obstructed through the principal arterial trunk of an otherwise healthy extremity, the limb is certainly not found to be colder than the other; but if there is further obstruction afforded to the passage of the blood, as for example by tying the principal vein, deficiency of temperature commonly attends. Here proba-

bly there was obstruction situated beyond the principal trunks, producing a similar degree of influence.

The state of this heart approached more to passive, as the French have termed it, than to active aneurism. At the time of death the structure of the heart certainly seems to have been less powerful than natural; from the other appearances about it, I am disposed to conclude, that its own structure was unhealthy.

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## CASE II.

In the following case there seems to have been a nearly similar state of the abdominal aorta, with enlargement of the heart.

James Dudley, aged twenty-five, had been in Saint Bartholomew's Hospital about a month before I saw him, which was in June 1812; the account I obtained of the case was as follows:

He had been ill nine months, complaining of constant pain in the head; his spirits much depressed, and he had become greatly emaciated. A few days before his death he was taken speechless, and unable to support himself, and finally insensible; after a day or two however, he recovered his

senses so far as to understand what was said to him, and to do what he was bid. He would put out his tongue when told to do so, but it seemed a matter of extreme difficulty to get it beyond his teeth, and when there, he would let it remain, not withdrawing it back again; every thing shewed extreme languor, but there was no paralysis. While in this state he sweated most profusely, and from his perspiration, but more particularly from his urine, a most powerful smell of ammonia was evolved, sensible to a considerable distance as if he had been rubbed with the linimentum ammoniæ. His urine was very red and turbid. Stools were procured by medicine. Before he died he again became insensible.

*Inspection.*

The scalp adhered more firmly to the cranium than it usually does, and there was a good deal of serous effusion into its cellular membrane. The cranium was also more vascular than common; there was no disease of the dura mater; there was effusion between the pia mater, and tunica arachnoidea, but in no great quantity; there was also more fluid than natural in the ventricles, but the quantity not excessive. There appeared to be a great deal of venous plethora about the head, and the texture of the brain was firmer than common.

The emaciation of this man had been great, and during life the abdomen was much sunk, and the aorta could be felt pulsating with uncommon strength; the actions of the heart also had been strong. The heart was found larger than natural; the increase was in the muscular structure of the left ventricle. The abdominal aorta would hardly admit the point of my fore-finger. The lungs were healthy.

*Abdomen.* The following were the appearances. The peritoneum was healthy, except behind the liver, where there were a few adhesions. It felt remarkably dry, as did the pleura also, forming a striking difference between the decreased secretions of the serous membranes, and the increased secretions from the skin. In the intestines there appeared to be a general turgescence of the vessels, but no inflammation, the vessels being all distinct, and there being no thickening; there was, however, an increased quantity of mucus effused into their cavity. The stomach was redder than the rest. In the colon were contained a great many hard scybala.

The liver was unhealthy, not enlarged, but considerably firmer than usual in its texture, and containing interstitial deposit. The gall-bladder was distended with very thick bile, of a very deep colour; some similar in appearance was contained

in the duodenum, perhaps pressed into it after death, for in the course of the canal, the more recent contents were very slightly tinged; and the scybala in the colon were quite destitute of bile, marking a former state of the liver, where there was entire cessation either of the secretion or the excretion of the bile. The spleen was rather larger than common. The kidneys appeared healthy, very red, and full of blood. In the bladder were several spots of dark inflammation, with little sloughy ulcers on each; was this idiopathic, or was it produced by the very irritating nature of the urine?

From the diminished calibre of the vessels, it is very clear that, in these two cases, the strength and apparent fulness of the pulsations could not have proceeded from the stream of blood; it must have been caused, I imagine, by the increased impulse communicated to the surrounding parts, from the difficulty of transmission through the trunks, or augmented "secousse" of the arteries, as Richat terms it.

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### CASE III.

This case occurred also in the summer of 1812. The name of the patient was Charlotte Lewis. I saw her only just previously to her death, when there was an extreme degree of anxiety, and she

had become nearly insensible, most probably from effusion taking place within the cranium. Of her previous history I could not obtain any account that was to be depended upon. There was much effusion throughout the body, but the arms, face and neck were particularly swollen, and extremely suffused with venous blood. It was not long before she died from protracted suffocation, as I may safely venture to call it. Her body was opened shortly after death.

The *abdomen* was very much distended with fluid, which appeared to be serum only. The peritoneum was more opaque than usual, but was quite free from diseased appearances, except at one point; on the surface of the liver was a layer of lymph, so smooth and thin, as to appear altogether like an adventitious membrane. The liver itself was soft in its texture, and much loaded with blood: to me it appeared to be healthy, but it is right to add, that other gentlemen who saw it thought it otherwise. I believe this was only a deceptive appearance from its being so very turgid with blood.

The stomach and intestines were healthy; the former contained some undigested aliment, mixed with mucus and bile; the latter only a little pulpy matter, like succus intestinalis, mixed with bile.

*Thorax.* This cavity was much incroached upon



by the effusion into the abdomen ; there was however considerable effusion into it, also of serous fluid. The pleura was thicker and whiter than common ; the lungs healthy, but very much compressed by the effused fluid.

The pericardium was much distended with serum. The heart gorged with blood. All the cavities, the coronary veins and the great vessels full.

The right ventricle was thin : the left very strong in its structure.

The abdominal aorta was empty ; its calibre was nearly the same as that of the vena cava at the same part ; but the artery was capable of being stretched to a considerably greater extent, while the vein did not admit of being stretched at all ; so that it is pretty clear that in this instance the artery was *capable* of transmitting much more blood than the vein.

Through a considerable space the brain was crammed full with a firm coagulum, which occupied the whole diameter of the vessel, and left no interspace whatever between it and the sides, which were at the same time thicker than usual. It was not a coagulum equally tinged with red particles throughout, or altogether without them, as in what have been mistaken for polypi in the heart ; but more of

these particles were contained towards the sides all round, while the centre was nearly white. At the time this coagulum was observed so firm in the vena cava, the blood in the other veins was fluid.

Several parts of the internal coats of the artery had a deposition of lymph, which could be scraped off. I think the internal coat was thickened, the middle one was so, decidedly.

In the head great effusion was found between the tunica arachnoidea, and pia mater.

I think it will not be considered a very improbable conjecture to suppose that, whatever the nature of the disease might be, there was decided obstruction to the return of blood to the heart. And it is also highly probable, that the principal seat of this obstruction was in the vena cava. It cannot be proved that the coagulum, which filled that vessel after death, had existed during life; but it is highly probable from the appearances that it did. The coagulum found was by no means like that which usually takes place spontaneously in the blood, which is never so firm and entirely solid as this. Besides, why should the blood have coagulated in the vena cava only? From the lymph effused on the surface of the arteries, as well as from the peculiar state of the vena cava, it is not improbable that there was diseased action of the vessels generally.

In these cases, certainly in two of them, there was evidence of mechanical obstruction, situated in the course of the circulation, and I presume that the enlargement of the heart may be attributed to this cause. In that which follows, it also appears probable, that obstruction existed in the course of the circulation in the great vessels, however at any rate not *mechanical*, but *functional*.

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#### CASE IV.

— Kibby, aged thirty-four, was admitted a patient in Saint Bartholomew's Hospital, early in the spring of 1812. At the time he came in, he appeared not far from his dissolution. His countenance and lips were livid, and rather swollen; his eyes effused with fluid, and red; his breathing excessively difficult, with a great deal of anxiety; and it cost him much effort to utter a sentence. A cough distressed him very much, and latterly it had been attended with a considerable degree of hæmoptysis; he was greatly debilitated, and his frame very much wasted. There was a slight degree of œdema of the feet; the pulse at the wrists was hardly perceptible, particularly in the left; and when it was to be felt, nothing can be conceived more irregular. His carotids beat strongly and evidently; his heart largely and forcibly. He could lay completely back in bed, and on either

side, but generally on the right. His bowels were irregular; his appetite lost; his urine very high-coloured and turbid, and exceedingly scanty, so as at times to amount only to three or four ounces in the twenty-four hours. He had from his own account lived freely and laboured hard; he formerly was very robust.

Lead was given him to check the hæmoptysis; together with castor oil, squills, and cascarilla.

It was long doubtful whether he was to live or die; but from the time his bowels became freely open, his state improved. The amendment however was marked more decidedly, when the kidneys began to secrete a greater quantity of urine, and it could be traced progressively, as this secretion became more copious.

In short he was discharged, after having been about six weeks in the house, reprieved, however, rather than cured. At the time he went out, the pulse at the *wrist* was moderately strong, and the action of the heart very considerably diminished.

In the month of August he returned to the hospital to finish his days. His state was nearly as bad as when I first saw him; his legs were much swollen.

Shortly afterwards I went into the country, and as he died before I returned, I did not see the termination of the case ; but his heart is in Mr. Abernethy's collection, and proves what might have been inferred to be the case from the state of the pulsations during life, that there was no mechanical obstacle at the orifices of the heart from ossification or other disease ; for these would, I imagine, have permanently increased its pulsations, and lessened those of the arteries, or entirely extinguished them. With all the symptoms usually attributed to ossification of the valves, the heart of this man had undergone no other alteration, than the simple augmentation of the size of its cavities.

It will be observed in this case, as it may in many others of a similar nature, that there is much stronger evidence of obstruction to the passage of the blood *through* the vessels, than *from* the heart : there was a great increase, for example, of the pulsation in the carotids, while those of the radial artery were almost extinguished. Could this have been the case if there had been obstruction at the orifices of the heart ? It was not owing to the reflux of venous blood in the jugular vein, for it was synchronous with the pulsations of the arteries elsewhere ; it was likewise firm and arterial, if I may be allowed the expression. Besides, there was a difference in the pulsation of several other arteries, those of the two wrists for example : and finally, if the obstruction had been originally situated at the

heart, how did it happen that the pulse was again restored to a considerable degree of fulness?

This contrast between the fulness and strength of the pulsations of the heart, and the fulness of those, of some, or all of the arteries, is no very rare occurrence. It arises no doubt, in many instances, from mechanical obstruction situated in the heart; but that it is sometimes attributed to this cause unjustly, is proved by the case I have just related; and others are not wanting, of which the records establish the same fact. It is by no means unusual to meet with instances in diseases of the heart, in which the pulse at the wrist has been nearly suppressed and subsequently restored; but although I have other notes to this effect, yet I think it unnecessary to multiply examples of this kind\*, the fact being proved. It may, however, be worth while to inquire into the cause of this phenomenon.

There are many analogous states which tend to illustrate it: we know that if the functions of any part cease, or if it be removed from the system, the arteries leading to that part cease to transmit blood. The same happens if a ligature is applied; the vessels contracting between the ligature and the next branch above. Whereas, on the contrary,

\* For cures of this kind I refer to Corvisart *Sur les Maladies du Cœur*, Obs. XIII. p. 74. Obs. XIX. p. 96. Obs. XXXVII. p. 39. Obs. XXXVIII. p. 166. Obs. XVI. p. 86. Morgagni de *Caus. et Sed. Morb.* Book II. Letter XIII. Art. 34.

if the part to which an artery carries blood, requires an increased proportion, we find that the vessels fully allow its transmission, as for instance, in blushing, in inflammation, in the increased secretion of a gland, and in the anastomosing branches where a trunk is tied. The laws by which the contractions and the dilatations of arteries are governed, are still but very imperfectly understood; but I think it is clear, that the right consideration of the class of diseases in question, must greatly depend on a knowledge of them.

It is evident, that in the case of a *local* affection, where the pulsation of the arteries leading to it, is either increased or diminished; this increase or diminution cannot be attributed to the influence of the heart, which must in every case act equally on the whole system; if I may be allowed the use of a simile, the arteries are like the pipes leading from a reservoir, through which, *by the guidance* of an intelligent hand, more or less fluid is sent, in different directions, at different times, according to the demand for it in various parts.

If the wants of the part supplied do not govern the quantity sent, to what can we attribute this power of regulating the supply? The heart, as just stated, is out of the question, and the arteries, I think, must be admitted to dispose themselves, or be disposed to receive more or less at different

times, in consequence of an influence communicated to them by the parts they lead to. But there is the same consent between any one part and the arteries which lead to it; and also between the whole of the parts of which the body is composed, and all the arteries which go to them.

If any part be injured it inflames; we see the arteries leading to it in every direction allowing free ingress to the blood. If it be a part of consequence, the whole system sympathizes with the affection of the part; and as the arteries leading to it are affected, just in the same way do those leading to every other part appear to be. For example, if it be an injury to an organ of no leading importance, as in skin, cellular membrane, &c. and attended with no very extraordinary degree of violence, vigor characterizes the local inflammation, and the full and free pulse denotes that the vascular system at large partakes of this mode of excitement. But if, on the contrary, the injury be of that sort which is attended with sloughing, the arteries of the part lose their powers, or rather cease to transmit blood; and the arterial system in general, is affected in a manner differing in degree, but similar in nature. Again, when a part inflames, all its secretions are arrested; so are those of the system generally: but as soon as the natural ones are re-established, or diseased ones are set up, so soon are the secretions of the body at large re-



stored; and throughout the state of the vascular system as a whole is found to correspond very exactly with that of the part.

If it be granted then, that the actions of the arteries are regulated by the disposition of the parts to which they carry blood, and besides the arguments which I have just adduced, from pathological observations, there are numerous others which may be drawn from the physiology of man and animals in general, it will follow, that in this last case of Kibby, as in many others, we must seek for an explanation of the peculiarity of the pulsations, not in the state of the heart, but in the state of the system, which that heart is intended to supply. And if such a state of parts is often found to exist, as will determine a pulsation feeble and small; it happens that, on the other hand, we meet with numerous others, where it governs one full, bold and strong. I do not now speak of fevers or other disorders, the explanation of whose phenomena, however, is of course liable to be affected by what has been here advanced, but confine myself to diseases of the heart, the causes of which, I may venture to repeat, still remain in a great degree of obscurity.

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#### CASE V.

Henry Watkins, aged fifty-nine, a sailor, had

been subject to complaints about his chest for a considerable time. A little more than a twelve-month previous to his admission into Saint Bartholomew's Hospital, he had been a patient at the Haslar, for complaints similar to those for which he now applied for relief. He had at that time swelling of his legs and thighs, which, it should seem, was removed with difficulty. I did not see him till he had been in the hospital about two months, and previous to that, he had had a severe attack of erysipelatous inflammation in one of his feet, during which, and for a short period afterwards, the complaints of his chest were very materially relieved: he, however, caught cold, as he imagined, and they returned, with swelling in his feet.

When I saw him he had a **sallow waxy countenance**, **cedema of the upper and lower extremities**, but not considerable; **difficulty of breathing**, though capable of making a deep inspiration, and a good deal of cough. His abdomen swelled, without fluctuation, and pressure gave pain. The pulsations of the heart were large, strong, and frequent, and might easily be felt in the epigastrium, with a sensation "as if there were something alive within him." The pulsations of the arteries were correspondent in fulness and strength with those of the heart; the carotids beat with particular strength. Occasionally he had profuse perspirations; his urine was scanty, not amounting to

more than a pint in twenty-four hours. Shortly before his death he had copious clammy sweats, produced by violent pain in the epigastric region.

On the evening of the 19th of May, he died. There did not appear to be any material alteration in his state shortly before his death, nor did I apprehend so immediate a termination; but he was seized with a violent retching, and shortly expired.

On the following day, May 14th, his body was examined, fifteen hours after death, and it was then still warm. The face was suffused with blood; the jaws strongly clenched; and there was a universal rigidity of the muscles.

On opening the abdomen, a small, and but a small quantity of fluid was found. The peritonæum bore no marks of inflammation, except at the back part, and there some lymph was thrown out. The liver had a good deal of interstitial deposit; the stomach and intestines were free from disease. The spleen was larger than common, and more solid than natural.

The kidneys appeared healthy, although their functions had been so much disordered; they were very full of blood.

*Thorax.* The pleura adhered most strongly and generally, so that it required great force to sepa-

rate the lungs at the back part; these adhesions were thick and strong like leather. The substance of the lungs also was altered apparently, but I rather think this was owing to their being gorged with blood; on pressing them a great quantity of mucus escaped.

The heart distended the cavity of the pericardium, which membrane was rather thicker and more opaque than common, and on its reflected layer, which covers the heart, was a broad white patch; one of those which are often found, and supposed to indicate no disease, because no other diseased appearance co-exists. To me it seems probable, that they are vestiges of former inflammation, and of lymph formerly thrown out, having undergone absorption to a considerable extent; for they frequently appear irregular, as if the absorbents had been at work upon them; and those which I have seen, were capable of being pulled off from the pericardium like adventitious membrane. But to return from this digression, the heart was very large, and its cavities were all gorged with blood; so were the *venæ cavæ*, pulmonary artery, veins, and aorta. The cavities of the right side were merely enlarged and filled with blood, but the left ventricle was not only enlarged in capacity, but its muscular structure was also greatly increased. The aorta was enlarged generally, and there was a great deal of ossification about the root of it. The valves were also ossified in some degree, but not so

as to prevent them from performing their functions properly. In the thoracic aorta were also some specks of ossification, and in the abdominal, it existed to a very great degree indeed.

In this case there was evidence during life, as well as after death, of augmented force of the action of the heart, and under distention of the arterial system. Analogy would lead us to suppose that it proceeded from obstruction; but there was no organic alteration of structure about the heart itself likely to produce it, and it is therefore fair to suppose that the obstruction was situated in the minute vessels, of a very different nature perhaps from that which existed in the case last related.

Was the ossification and disease of the aorta an idiopathic disease of the vessels, or was it produced by the increased actions of the vascular system? This disease is so common a concomitant of active aneurism, that it is difficult to avoid supposing it to be either a cause or an effect; but if the former, that is, if it be idiopathic, why does it not as often occur in the pulmonary artery? If it be considered as a consequence of the disease of the heart, this difficulty is easily explained, because that disease is found on the left side more frequently than on the right, in the same proportion probably as disease of the artery which leads from it. If we should be able to explain hereafter, how it happens that disease of the heart so much more frequently oc-

curs on the left side, then we may at the same time account for the ossification of the systematic artery being so much more general.

Where there is enlargement of the ventricle, and augmented strength of pulsations during life, increased capacity and strength of the arteries is found to exist after death, especially if the case has been of long standing ; and also very commonly ossification and steatomatous thickening. That the artery should be enlarged in the same proportion as the ventricle, seems natural enough ; and also that its parietes should be thicker, since it has to sustain the impetus of a larger column of blood, impelled with præternatural force ; but if there be a difficulty opposed to the arteries in emptying themselves of their contents, which I imagine to be the case, it will follow that the vessels which are now immediately in the neighbourhood of the principal trunk, will have more especially the blood forced into them with undue violence ; and this will be very likely to occasion unhealthy deposition in the parts so supplied. The vasa vasorum will be particularly exposed to this cause of derangement.

The coronary arteries in this case, as in most of a similar nature, were also greatly enlarged. If we suppose obstruction to the passage of the blood at the extremity of the arterial system, the resistance would of course throw back the blood to the heart more

particularly, as being the other end of the column. But at the brifice of the aorta valves are interposed to prevent their reflux. In addition, then, to the first and natural impulse caused by the action of the heart, there will be the re-action occasioned by the obstruction, and the effects of this will be more felt near that viscus. It is not therefore to be wondered at, that the coronary arteries are found to participate in an eminent degree in the alteration produced by this state.

Corvisart has considered this augmented influx of the blood into the heart as one of the causes of active aneurism: that this opinion is erroneous, I think I shall hereafter be able to prove; but this is a question foreign to my present purpose.

There is, however, another alteration of structure, on which I should wish to make a few observations: namely, a disease of the valves of the aorta, which is very commonly found where there is any ossification of that vessel, and which is generally believed to be a frequent cause of aneurism of the heart.

In the first place it must be observed, that these valves, when ossified to such an extent as to afford obstruction to the exit of blood from the ventricle, are commonly found raised and not parallel to the sides of the vessel, as might have been expected *a priori*, considering the current of blood flowing

through them from an enlarged heart. This peculiarity it is difficult to explain; but one mode of doing so would be, to offer as a solution of this phenomenon, obstruction situated at the extremity of the arterial system, the influence of the reflux determining their position.

In the second place, I have to state, that in the great majority of instances, where ossification of the valves is found, the calibre of the aorta is also greatly enlarged; now the obstruction thus situated at the orifice of the ventricle should, if it were the primary disease, by diminishing the stream of blood, have caused rather a diminution of the vessel. But if we suppose dilatation and disease of the vessel first induced, and this disease the ossification which makes the valves rigid; then there can be no difficulty in explaining, what is often found, an aorta of a preternaturally large diameter, where the aperture left by the valves would scarcely permit a quill to pass.

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#### *CASE VI.*

May 6, 1812, I assisted at the examination of the body of William Holford, who died in Saint Bartholomew's Hospital; the following were the appearances observed.

On opening the thorax, the lungs and pleura



were found perfectly healthy, and there was no effused fluid. The bronchial glands were enlarged and hardened. The mucous membrane lining the bronchiæ rather red. There was a great deal of fat in the mediastinum and about the heart. The heart felt very large through the pericardium; on opening that membrane it was found covered with lymph, which was more particularly heaped up about the roots of the great vessels; there were no adhesions. The cavities of both the auricles were larger than common; of the ventricles, about the usual size. The muscular structure of the right ventricle was of its ordinary strength; of the left, was most enormously increased in size and strength. The aorta unusually large and strong; the coronary arteries much larger than common; the aortic valves quite healthy.

The abdomen was not distended, but the caput coli was found to occupy a large portion of it. The cesophagus at its lower part, for six inches, was inflamed, and lymph thrown out; the stomach also had some appearances of inflammation; it was filled with matter apparently fæcal, much resembling what was found lower in the alimentary canal, and properly tinged with bile.

The colon was distended in two or three places into enormously large pouches filled with air, and in the intermediate space was contracted to a very

great degree ; contracted upon faecal matter, hard almost as bullets, which appeared to have remained in these pouches a considerable time, for where the scybala were lodged, the coats of the intestine had become exceedingly thin ; as if the contraction of the muscular coat had, by pressing the mucus against them, caused it to be thinned by absorption. There were large masses of these hardened lumps even in the rectum ; but there was in no part any of that diseased secretion, which often constitutes diarrhoea where there are scybala.

The liver seemed perfectly healthy. The peritonæum was not inflamed ; there was a good deal of fat deposited in every part of the abdomen, and there were a great many adhesions. The bladder contained a considerable quantity of healthy urine. The kidneys were very small and much diseased ; the renal arteries unusually large.

This man had lost much flesh, but his fat did not appear to be wasted. He had sores upon his legs.

He was opened shortly after death ; the corpse had a strong smell of perspiration, and was quite warm ; it was perfectly rigid.

In this case the aorta at its root, when cut open, measured three inches without being stretched,

and was very thick at the same place; the pulmonary artery measured only two inches, and was quite natural.

It may be naturally supposed that the inflammation of the œsophagus and stomach, of the former especially, which was very decidedly marked, should have produced some symptoms. The account which I obtained from a very close examination of the nurse who had attended him, was as follows: that he was in the first instance admitted for bad legs; that he had been in the same ward for the same complaint some time before; and in this last illness, had been a patient about a month; that during the whole time he had complained of a pain and a burning sensation about the pit of the stomach; that his appetite had been bad, and that during the last week he had scarcely ate any thing. He had had great difficulty in swallowing, and this action was accompanied with much distress. Two basins of sago was all he had taken for the last four days, and this with great difficulty. He had generally been very thirsty, and was fond of drinking cold water; nevertheless his friends had secretly brought him wine and brandy, which he had also drank. On the Sunday night preceding his death, he had, after a trifling exertion, been exceedingly ill, and was almost insensible the whole night. On the Tuesday he was again taken in the same way, and on the Wednesday he died. He had no stool for two or three days previous to his death, but be-

fore that, had, according to the nurse's report, gone to the privy regularly. This statement should be compared with the account of the appearance of the colon after death. There appears to have been no want of attention to the state of his bowels, as will be seen by the prescriptions which I subjoin. The case only shews that scybala will stand their ground against many purgatives. In the former part of his illness he had made rather a large quantity of urine; latterly it had been very scanty.

The following are the prescriptions.

April 7. Inf. ros. cum magnes. sulph. (this was usually given at moderate intervals, in small doses so as to produce gentle action of the bowels.)

April 14. Elect. senn. comp. p. r. n.

May 5. Sago cum vino; cerevisiæ lbjss. Inf. menth. sativ.

May 6. Emp. lytt. capiti raso.

Inf. sennæ cochleatim omni semi-hora donec, &c.

Enema sapon. moll. si opus sit.

That evening he died.

Although so much disease of the vascular system was found after death, no very prominent symptoms existed during life; or if they were present, they were confounded with those proceeding from the diseased state of the œsophagus and stomach.

It is difficult to say what was the immediate cause of this man's death. The head, it should seem, had been particularly affected during the last days of his life. The turgid state of the heart and great vessels also indicated suffocation, and I shall here beg leave to add a few remarks on the phenomena of death in this class of diseases.

In some cases emaciation only takes place, and the patient dies worn out, as it were, or with the powers of the vascular system quite exhausted; and without any effusion taking place. In others, and more particularly in cases where the disease has existed a great length of time, effusion previously occurs, and this may go on to such an extent, as of itself to produce suffocation \*. It however not unfrequently destroys life by its effects on the brain, when it takes place within the cranium. It sometimes is excessive in the abdomen, sometimes in the thorax, nor does it appear always possible to ascertain the cause of this difference, but there is one observation which I shall here

\* There is however one species of effusion which will be described below, that seems originally to form part of the disease; and the termination of these cases is generally very speedy.

make, which is, that when, as in Case V, there are very general adhesions of the pleura so as to prevent the effusion from taking place into the cavity, the fluid seems to be separated into the cells of the bronchiæ in greater quantity, and thus more speedily produces death, as appears to have happened in the case of Watkins. In cases where there is great emaciation and little effusion, it will generally be found that some of the secretions are remarkably increased, more particularly the perspiration and urine. I believe life is often protracted till this resource of the constitution fails, and effusion ensues.

With regard to the effusion itself, it differs very much in different cases; in some it is a soft and puffy anasarca, in others a firm and solid œdema. Of this I shall now give an example.

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#### CASE VII.

Richard Willimer, aged sixty-two. This man had been ill nine weeks, from a cold which he caught, as he supposed: he was a man of robust make. When he was admitted into Saint Bartholomew's Hospital, his legs and arms were swollen. The œdema was firm, and the limbs retained their shape, except some puffiness at the back of the hands. He could not lay back in bed; his abdomen puffy and swelled, particularly about the hypo-

chondria; when he does lay on one side, it is on the right; he has cough but little expectoration; urine has been scanty; appetite very good; bowels tolerably regular; tongue white; pulse about 90, somewhat irregular.

The latter end of March he began digitalis with tartrate of potash and dec. juniperi.

He got better, and continued to mend, making a larger quantity of urine, till about the middle of April, at which time it was copious, and the pulse was reduced below 70. During this period he continued the medicines quoted above, after which the symptoms became stationary, then the affection of the chest increased, as also the swelling of the limbs, particularly the arms. On the 5th of May, the prescriptions were altered to a grain of calomel every night, and an electuary with tartrate of potash and steel. On the 10th he died, to my surprise, as I find by my notes, for I did not apprehend so immediate a termination; this sudden change however is very common in diseases of the heart.

#### *Inspection.*

The thorax was extremely distended, so as to push down the superior viscera of the abdomen from beneath the hypochondria. The pleura was healthy. The lungs were quite healthy, light and

spongy in front ; behind they were loaded with blood, and so heavy, probably from this circumstance, as to sink in water ; it was doubted by some gentlemen present, whether there was not inflammation, but I should think there was not ; because none of its usual products appeared, and it was manifest that much of the density of this part of the lungs depended upon the contained blood, for, in the first place, we could squeeze out a great deal, which rapidly became florid on exposure to air ; and, secondly, we were able to inflate this portion. The mucous membrane of the bronchiæ was red, blood-shot I may term it ; but there was little mucus contained in it. The absorbent vessels were remarkably large and numerous, and the absorbent glands were larger than common. The pericardium contained a considerable quantity of serous fluid. The heart was much enlarged, and contained blood on both sides, and in both the arteries ; the right cavities were of their usual strength, the left ventricle had its sides very much thickened. There was no disease of structure.

In the abdomen there was a little serous effusion ; there was no diseased appearance in the alimentary canal. The kidneys were by no means healthy. The cortical hair was almost white, and much hardened in texture.

It appears that in this case there was augmented energy of the pulsations, but not in the degree



that is often found, but as there was much solid cedema, it is not improbable that this prevented, as it often does, the strength of the pulsations from appearing so great as it really is, in consequence of the thickness of the integuments.

These cases, where the cedema is of a firm and resisting nature, hardly susceptible of pitting on pressure, and not gravitating, but preserving in a great degree the natural state of the part, are by no means uncommon. This state is general over the body ; it appears to be connected with increase of arterial action, and generally occurs in young or robust men, especially after the application of a sudden chill.

There is a wide difference between this kind of effusion and that which occurs where there is merely obstruction to the return of venous blood to the heart. In that case I believe it sometimes happens that the secreting vessels pour forth a more than usual quantity of fluid ; but it also often happens, that the swelling which takes place is owing merely to the accumulation of the natural secretions, which can no longer be poured into the vascular system again for want of room. This state is altogether analogous to that which occurs when pressure obstructs a lymphatic vessel.

But there is a kind of effusion where the fluid does not gravitate ; where the skin does not lose

its colour, which pits with difficulty on pressure, which is tense and firm, and where the surface is hot and unperspiring. This frequently takes place in the neighbourhood of inflammations, particularly if they are deep-seated, or of an erysipelatous nature. The fluid effused is not the natural secretion, but approaches to gelatine. In the case which I last described, the œdema was very similar to that now mentioned, but instead of being confined to a part and produced by local irritation, it was general throughout the body, and idiopathic.

In the local œdema above-mentioned, there is reason to suppose increased action of the minute vessels, probably connected with obstruction to the free transmission of blood. In this species I should be inclined to believe that a similar state existed, but generally. In these cases, a person judging only from the state of the vascular system, would often be led to think there was inflammatory fever; the appearance of the blood, if any is taken, would rather confirm the supposition. But the disease is principally confined to this system. It is not fever. No proportionate derangement of the alimentary or nervous systems are found to co-exist. The disturbance of the vascular system is not governed by the others, but proceeds from causes more peculiar to itself.

As inflammation of the pericardium is often

found where there is active aneurism; it is natural to conjecture that this might have been the cause of the disease. But to this may be objected, that this inflammation can be by no means essential to the production of aneurism of the heart, because numerous cases occur where there is no appearance of inflammation of this membrane. Again, there is a species of pericarditis of which the symptoms are marked and decided; it appears, like pleuritis or peritonitis, to be idiopathic inflammation, and to possess its own peculiar characters and influence. This is the acute form; but the chronic may exist, and never be suspected, as was the case with Holford (Case V.); and the mistake is of very frequent occurrence. Corvisart says there is reason to suppose this kind to be consecutive; and when it is considered that in these subjects not only inflammation of the pericardium, but of the pleura, peritonæum, and even sometimes of the pia mater, is often found, with effusion of lymph, perhaps, or of serum, or of both, and yet none have been marked by their characteristic symptoms, (and this I will be bold to assert is often so,) there will be much reason to consider them all as secondary affections.

In this man, Willmer, the viscera at the upper part of the abdomen were much pushed down by the effusion into the thorax. This is a circumstance likely to lead to mistakes in the nature of the case; for the abdomen being thereby rendered

more tense and tumid, with anasarca of the integuments often existing at the same time, ascites is supposed to exist ; and what tends to strengthen the opinion is, that the liver can be felt projecting much below the hypochondrium. M. Corvisart notices the "*engorgement*" of the liver, and its protrusion from its natural situation. Injurious courses of mercury are sometimes instituted in these cases.

There is another circumstance which I shall mention here, although it would have been more in place after mentioning Holford's case ; and that is the eagerness with which the blood imbibes oxygen after death. This, coupled with the length of time during which the corpses remain warm in general, and the uncommon rigidity of the muscles, shews that the vital functions are often arrested before the vital powers are extinct in these cases : in short, they die of suffocation ; every thing denotes a state of asphyxia ; all the great vessels and all the venous system, more particularly that of the portæ, are gorged with blood ; and as they died, so they lived ; as long as the powers of nature could resist this state of things, and until the cause which first destroyed the balance of the circulation, has gone on increasing to such a degree as to be incompatible with further life.

In the lungs there commonly is found an extraordinary quantity of blood ; but often these organs

are perfectly free from disease. Yet in the state which I have described in this paper, there are many symptoms indicative of great disorder in them. One of the most prominent is the extreme dyspnoea ; but still it will be found, on directing the patient to make a full inspiration, that he has the power of doing so ; there cannot then be much actual disease in the lungs. He has a great deal of cough, perhaps, but the sputa indicate no very morbid state of the bronchiæ ; it is simply mucus. In all the earlier stages, although a position with the shoulders elevated gives him much relief, yet he can lie back and remain in an horizontal position, and often does so, without difficulty ; it cannot therefore proceed from water in the chest. To me the most probable explanation of all these phenomena is this. We may suppose that the blood no longer passing so freely through the heart, collects in and loads the small vessels of the lungs, as it does those of the face, lips, &c. as we plainly see. Hence that which is last sent into the organs of respiration, from the right side of the heart, is prevented in a very great degree from coming into contact with the air as it passes through them, and reaches the left side scarcely changed ; and this effect will be increased by the secretion which takes place in the bronchiæ ; for as we also observe in the eye, that it is overflowing with fluid separated from its mucus membrane, so similar secretions may well be supposed to take place into these cells, from the same cause.

There are a variety of other circumstances connected with this subject of secretion, bearing upon diseases of the vascular system, which I shall at some future time mention, but at present, this would lead me too far from my immediate object. In the preceding pages of this paper, I have pointed out various reasons for supposing, that a state of obstruction existed in the minute vessels of the body, and that the dilatation of the heart, which is so commonly attributed to obstruction at the orifices, does very often proceed from it, when existing in situations more remote. I will add more particularly in the minute vessels.

Whatever will fill the larger vessels will distend the heart; and therefore if these be kept in a state of plethora from any cause, such distension of the heart will be the effect; but plethora of the large vessels is not likely to be permanent, when the minute vessels are in a healthy state; but this is a subject also, which I have no room to discuss at present at length.

But independently of the quantity actually contained in the system, a greater or less proportion may be sent to and from the heart; and that this proceeds from the state of the minute vessels in the parts which the arteries supply, it has also been my endeavour to shew.

But there is another point which I wish to prove,

and it is, that not only dilatation and augmentation of strength are found to exist in the heart and arteries, when a larger quantity of fluid than natural is contained in them, and an extraordinary effort required to circulate it, but also that the converse of this is true, namely, that diminution of calibre and decrease of strength occur, where there is a less quantity of fluid, and less effort necessary to propel it. I shall conclude this paper by giving two or three cases where such diminution was found to exist, consequent upon a lessened supply of fluids to the cavities so altered.

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#### *CASE VIII.*

The subject of this observation, was a young woman, whom I first saw on the 29th of February, 1812. There was no appearance of her having suffered from previous illness, and the account she gave of herself was, that three days before, she had fallen down stairs, and struck the lower part of the sternum against the edge of one of them. She had got up again without assistance, but she had been ill from that time, and having applied at Saint Bartholomew's Hospital, was taken into the house.

She was sitting upright in bed when I saw her, supported by pillows, and breathing laboriously, with a countenance suffused with blood. Her

pulse was more frequent than natural, but not remarkably disturbed. Her tongue slightly furred; and little disorder of her nervous system. The heart beat largely and strongly. She complained of pain and tenderness about the spot where she received the blow. She had also spit a considerable quantity of blood.

I imagined the symptoms proceeded from the eruption of some blood-vessel or vessels within the thorax, in consequence of the injury. She was bled twice, but this appeared to afford but little relief; the first blood taken was a little buffed, the second not at all, and neither were cupped. None of the symptoms appeared to indicate inflammation. They continued to augment; there being at the same time a great deal of cough, and expectoration of bloody mucus. The pulse became smaller, more frequent, and considerably irregular. On March the 3d they were carried to the greatest possible extent, and that evening she died, the functions of the nervous system remaining unimpaired to the last, notwithstanding the circulation of purple blood.

#### *Inspection.*

The cavity of the thorax was found as full as it could possibly hold of serum; the lungs were healthy but compressed into a narrow compass; the



quantity of blood which could have passed through them latterly, must have been trifling. They were so much consolidated by pressure, as barely to swim, when thrown into water. The trachea appeared either inflamed or blood-shot, and contained a good deal of bloody mucus.

The right auricle and ventricle were large and quite crammed with blood, the left auricle was also enlarged in capacity, and its sides greatly augmented in strength. The auricle *properly speaking*, was occupied by a growth of diseased structure, one of those excrescences so frequently found attached to the inner lining of the heart. There was a similar one in the sinus, nearly closing the auriculo-ventricular orifice. The foramen ovale was open, and appeared as if it had been recently burst; the left ventricle was rather smaller than usual. In it was *a small coagulum*, easily separated from the diseased growth above-mentioned.

The abdominal viscera were considerably displaced by the effusion within the thorax. They were in general healthy. The ilium was of a darker red in some places than in others, but this did not amount to disease. The veins generally turgid. The spleen large, very spongy, and entirely separated from its capsule; in the stomach there were two puckered up places, looking like the vestiges of former ulcers.

In this case it will be remarked that there was no obstruction at the orifice of the left auricle ; that cavity was enlarged and its muscular structure increased ; the two right cavities were simply enlarged ; the left ventricle somewhat smaller than natural. This case terminated so rapidly, that there probably was no time allowed for the ventricle to diminish to any very remarkable degree. Also, there was no œdema. Could this be accounted for by the great effusion into the chest, in so short a time, especially when it is considered that the quantity of blood sent from the heart, was much diminished ? That this blow accelerated the woman's death, cannot, I think, be doubted, but that it *produced* the excrescences which were the immediate cause of her death, is highly improbable. What influence could it have had in opening the foramen ovale ?

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#### CASE IX.

Ann Hogan, aged forty-eight. This woman, whose appearance denoted an age much more advanced than that she stated, was admitted a patient on the 26th of March, for ascites ; the preceding autumn she had been in the hospital for the same complaint, and was then tapped with considerable advantage. She was very eager to have the opera-

tion performed again ; and at her particular request it was repeated on the 9th of May.

When she came into Saint Bartholomew's, her state was as follows. The abdomen was very tumid, with evident fluctuation, very tender, and at times extremely painful, feeling, to use her own expression, as if it would burst ; her digestive functions much impaired, and the bowels a good deal purged, probably from the medicines she took.

The functions of the thorax were little disturbed ; she had not much dyspnoea or cough. She could fairly lay back in bed, and, in short, there was no symptom of difficulty in the return of blood to the heart. There was a little oedema of the feet. She was much emaciated ; her skin brown and dry.

The pulse was frequent, and not remarkable in any other way, than that the radial artery at the wrist was very tortuous, and felt much thickened, as if almost ossified. Examination afterwards shewed, that but little blood could have been sent into the arteries at each stroke ; but this, as it afterwards appeared, being thrown in with much force, into a vessel whose sides were thickened, the effect was calculated to deceive, the pulse appearing to be not less large or strong than natural. The urine was very scanty and high coloured. All the symptoms denoted that kind of peritonitis,

which is attended with effusion of serum and lymph.

Rather more than three weeks before her death, she was so much worse, that I imagined her then dying; but she fell into a state of deep sleep, which lasted thirty-six hours, and when she awoke, she was very much better, ate heartily, and made a good deal of urine. In a few days, however, she relapsed again. The day before she was tapped she had vomiting of morbid secretions; but she always expressed so much eagerness to have the fluid evacuated, on account of the *bursting sensation* of the abdomen, that her desire was complied with: four days after which she died.

### *Inspection.*

On opening the abdomen, a vast quantity of serum escaped, although so short a time had elapsed since she had been tapped, and in the interim, she could have taken but little fluid, and the system, it might have been expected, would have been well emptied by continual vomiting and purging.

The serum at first flowed off pretty clear, but latterly it was turbid and bloody.

The omentum, mesentery, coverings of the viscera, and, in fact, every part of the peritoneum

were in a high state of inflammation, and very much thickened, lymph being thrown out on the whole of the surface. There were no adhesions in front, but at the upper part of the abdomen, and under the hypochondria, they were numerous and quite recent, and the surface of the liver and spleen were complete coats of lymph of old standing. This inflammation of the peritoneum may be considered as a sufficient cause both for the effusion and her death.

I thought it not impossible that we should find particular marks of inflammation, at the point where the trocar entered; this, however, was not the case, it was simply closed by a coagulum. There was a good deal of ecchymosis around, but no increase of the inflammation, more than at any other part.

The mucous membrane of the alimentary canal was quite unaffected; the contents were of the natural colour, and by no means in excess.

The liver was in a remarkable degree smaller than natural, and its anterior thin edge was gone. This edge, as it now existed, was situated considerably within the hypochondria, pushed up by the effusion probably, and quite thick and blunt. The substance of the liver was not firmer than common, it contained a good deal of interstitial deposit; there was no specific disease in it; the

bile was healthy. The lymph effused on the surface of this viscus looked as if moth-eaten; from the action of the absorbents no doubt. The spleen had a deposition of lymph on its surface, equally old and thick. It was much enlarged, and rather consolidated in its texture. The kidneys were remarkably large; seemed very turgid with blood; no disease whatever was perceptible. The bladder contained a good deal of very high-coloured urine.

The thorax was examined as a matter of course, but with no expectation of finding any particular alteration of structure. There was a little effusion of turbid serum, but the lungs and pleura were healthy. The pericardium was healthy, and contained no unusual quantity of fluid.

The heart was very full of blood. This appeared rather an odd circumstance in a person who did not die from any obstruction to its passage. We found the right cavities much distended and large; the left auricle was also filled with blood, and much larger than common. In endeavouring to pass my finger into the ventricle, I could only get the point of it through the annulus venosus with difficulty. On making a section of the heart, parallel to its base, there was found to be scarcely any cavity belonging to the left ventricle, while its parietes were remarkably thick and strong. The mitral valves were also found to have a sort of excrescence at-

tached to each of its most projecting parts; these however were not large.

In this case there can be little doubt that the diminished size of the cavity of the left ventricle was owing to the diminished supply of blood sent into it. It will be observed, however, that there was no one symptom which led to the suspicion of the disease during life, and that there was no effusion into the thorax, or general cedema : how is this to be accounted for ?

In the first place, organic alterations in the vascular systems of old people, are much less rapid in their progress, and it should seem that the constitution has time to accustom itself thereto. Secondly, there had been for a considerable time (several months) a degree of quietude and rest, rendered necessary by the abdominal disease. Thirdly, there were large evacuations constantly kept up from the kidneys and bowels, with a view to cure the ascites ; added to which, the effusion into the abdomen itself, might have proved a substitute for that into the other cavities.

The disproportion between the size of the cavity, and the size of the walls of the ventricle, was very remarkable. It is not improbable, that nature endeavoured to remedy the defect produced by the small quantity of blood which could be circu-

lated, by adding to the force with which it was transmitted.

I do not find it stated in the notes of either of these cases, that the calibre of the aorta was diminished. It is probable that the structure of the arteries being peculiar, may require some time for a noticeable increase or decrease to that place in them. In the first case the termination was too rapid to admit of it.

These two cases I have rather given on account of the singularity of the circumstances which attended them, than for any other reason; they go to prove what I have before stated, that where there is diminution of quantity there is also diminution of cavity. For other examples of the same kind, in which, however, the calibre of the arteries was materially diminished, I shall, in a note, refer to other authorities\*, as am loth to encroach upon the time of the Society by quoting cases, which, however, bear most strongly on the point in question. Of those which I have taken the liberty of laying before it, the I, III, IV, VI, VIII, and IX, are probably deserving of attention; at least there are peculiarities about them, which are by no means common; and they tend to illustrate

\* Vide Corvisart, Obs. XIX. p. 96. Morgagni, Letter XVII. Art. 12.



some points of consequence in the pathology of these diseases.

In maintaining the opinion that alteration taking place in the minute vessels of the body, (I mean the nutrient and secreting,) is a chief and principal cause of diseases of the heart, I do not pretend to discard the proper influence of the vital powers of that viscus itself in producing its own diseases. Indeed from all the phenomena I observe, there appears to be very considerable power resident in it, of sympathizing directly with other parts, which implies the property of receiving morbid impressions immediately; but my reason for supposing that it seldom undergoes any morbid enlargement, independent of the effects produced upon it by the minute vessels of the body, is principally founded upon the fact, that the left ventricle is more commonly enlarged than any of the other cavities, which is precisely the one most likely to be affected by changes in these vessels; while the left auricle, which belongs to the same side of the heart, is more exempt from alteration of structure than any of the others; which is the reverse of what we might expect, if the morbid state were idiopathic. To develop, however, the different arguments which may be adduced in support of this opinion; and to compare them with those which might be placed on the opposite side, would occupy a great deal more time than I should feel justified in taking up at present; but I may at some future period

to lay before the Society the views I  
on this particular subject more at large.

While the cases, I have omitted to describe  
the sudden startings during sleep,  
the anxiety, the coldness of the extremi-  
ties &c. which are almost invariably con-  
comitants of vascular disease. It would have taken  
up unnecessary space since this is not a descrip-  
tion of the malady, but an inquiry into its nature  
and causes. Also, I have for the most part omitted  
to say any thing of the treatment; and that for two  
reasons. I wished to avoid saying so, as it was not  
directed by myself. Secondly, they were cases in  
the last stage, which are unfortunately but too much  
beyond the reach of assistance, or at any rate of  
cure; but such it was necessary to select, as my  
object was to illustrate the nature of the symptoms  
during life, by the appearances after death.

Lastly, I have said but little of the opinions  
which others have expressed on this subject. To  
have stated that Senac has warmly espoused the  
doctrine of obstruction in the minute vessels, would  
have rendered a long discussion necessary on the  
validity of his opinions, as supported by his argu-  
ments. It would have been out of place in the pre-  
sent instance. In speaking of solid œdema, I should  
not have omitted to mention the opinions of Dr.  
Blackall, Dr. Wills, and Dr. Grapengiass, but  
that the cases here recorded and the remarks made,

were collected and noted previously to my having seen the observations of either. The remarks indeed under a somewhat different shape, were made the subject of an essay, which I read to the Medical Society of Saint Bartholomew's Hospital in the autumn of 1812, and was written in the spring and summer. The cases are almost altogether taken from among those I had observed before that period; and I have much to regret, that in consequence of not knowing at that time the coagulable nature of the fluid separated from the vessels of the kidneys and other parts in cases of this description, I could not make any observations on this point.

*Exeter, January 15th, 1817.*

**FURTHER OBSERVATIONS**  
ON THE  
**LIGATURE OF ARTERIES;**  
TO WHICH IS ADDED  
**A CASE OF POPLITEAL ANEURISM,**  
ATTENDED WITH SOME UNUSUAL CIRCUMSTANCES.

By **WILLIAM LAWRENCE, Esq. F.R.S.**

PROFESSOR OF ANATOMY AND SURGERY TO THE ROYAL COLLEGE OF  
SURGEONS, &c. &c.

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*Read June 24, 1817.*

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**SINCE** I communicated to the Society the description of "a New Method of tying the Arteries in Aneurism, Amputation, and other Surgical Operations," which is printed in the Sixth Volume of the Transactions, I have constantly employed the method therein proposed, both in Saint Bartholomew's Hospital, and in private practice; and have now tried it in many operations of almost every description. The general result of my experience is, that this plan, by diminishing irritation and inflammation, and simplifying the process of dressing, very materially promotes the comfort of the patient, and the convenience of the surgeon, while it has

not produced ill consequences, or any unpleasant effect, in the cases which have come under my own observation.

I have found in my own practice, what has been confirmed by others, who have communicated to me the result of their experience, that the small knots of silk generally separate early, and come away with the discharge ; that, where the integuments have united by the first intention, the ligatures often come out rather later, with very trifling suppuration, and no painful inflammation ; and that, in some instances, they remain quietly in the part.

In two or three instances I have been told that it was thought the ligatures seemed to have caused irritation and pain. These were amputations ; and we are accustomed to see effects quite as considerable as were alluded to here, produced by the state of the bone and other causes, where the ordinary method of securing the arteries is practised ; so that I could not, on close inquiry, find any reason to ascribe what was complained of to the use of the silk ligatures, and the practice of cutting off their ends close to the knots.

I do not wish to conceal or explain away any objections, but merely to put the Society in possession both of what I have experienced, and been informed of. I should state then that I have seen

much advantage, and no bad effects from this plan of tying the arteries; and that the objections made in one or two instances have not been grounded on any consequences that could be closely traced to the ligatures, even by those who made them.

Under some circumstances the method will be attended with peculiar advantages, as in crowded military hospitals, where the destructive hospital gangrene either exists, or may make its appearance. Every measure tending to accelerate the union of wounds, whether after operations or under other circumstances, is of great importance in averting the probability of this calamitous occurrence.

When I communicated the former paper to the Society, I had not tried the method in the operation for aneurism: the opportunity of doing this has occurred to me since, and some gentlemen have kindly informed me of the results of their experience.

My friend Mr. Carwardine of Thaxted, tied the femoral artery in a case of popliteal aneurism with a small silk ligature, and cut off the ends close to the knot. The patient, James Newell, thirty years of age, was a sadler, and ascribed the complaint, which had existed two months, to a sudden exertion in pulling off a tight coat. The wound united entirely by the first intention, not a particle

of pus having been formed at any time ; and it continued perfectly sound at the distance of some months from the operation.

I operated for popliteal aneurism on Thomas Goodhew, a healthy countryman, thirty-three years old, in Saint Bartholomew's Hospital, on the 29th of March, 1817 ; tying the artery with a single small silk, and cutting off the ends close. The tumor was large, and situated in the inner and lower part of the thigh, just where the artery passes through the triceps. He described the swelling as having shewn itself first without any beating on the back of the limb, towards the calf of the leg, and having subsequently advanced towards the front, and began to pulsate. Mr. Ilott of Bromley, who sent him to the hospital, corroborated this statement. With the exception of the integuments, the wound united by adhesion. The great restoration of power in the limb, with the excellent state, both of the part and of the general health, induced me to allow him to get up, and move a little about the ward in eight days ; an indulgence which however, generally speaking, I should not consider as proper at so early a period after tying a large artery. He left the hospital, and returned to his ordinary country occupations on the 17th of April. The wound continued to discharge a small quantity of matter till the end of May, when the ligature came away, and it healed firmly.

During the operation it was accidentally discovered that this patient had another aneurism in the precisely corresponding situation of the opposite thigh. It pulsated strongly, and was rather smaller than a hen's egg. He said it had existed twelve years, and at one time had been as large as an orange. During the short time of his remaining in the hospital it underwent no change; and I conclude that it is still unchanged, as Mr. Hott, from whom I have received a letter respecting this patient, says nothing about it.

Mr. Kenrick Watson, of Stourport, in Worcestershire, gave me the particulars of a case, in which he tied the humeral artery for an aneurism produced by wounding that vessel in the operation of phlebotomy. He states that "the ligature was put on the humeral artery upon the 2d of March; the wound was quite healed by the 10th of April. On the 3d of May, a small tubercle, which had been felt under the skin in the centre of the cicatrix, appeared above the skin, and proved to be the knot of the ligature. There was no inflammation nor discharge, but the ring of the ligature was firmly impacted in the centre of the cicatrix. In about a week from this time, the whole of it was expelled, apparently in the same state as when it was placed upon the artery.

My friend Mr. Hodgson tied the ulnar artery in the way I have recommended. The skin healed



over, but a firm knot gradually formed under it. He opened this five or six months afterwards, and found it of almost cartilaginous hardness; the knot of the ligature was in its centre without any pus.

Mr. W. Cumin, of Glasgow, was kind enough to transmit to me the knot of a ligature, which had been discharged from a stump at a considerable distance of time, (I think not less than two or three years) from its application. In a subsequent letter, dated College, Glasgow, July, 1817, he communicates the result of his experience, which I now lay before the Society.

“ In my letter inclosing one of these ligatures, I stated that I had seen the practice followed with good success at the General Hospital, La Corderia, (the rope work) near Bilbao, in the autumn of the year 1813. It was first suggested, *as I understood*, to Mr. Henning, now a deputy-inspector of hospitals, by an hospital mate, (Mr. Hume,) who had seen it practised by a naval surgeon, stationed somewhere on the coast of British North America. The practice appeared peculiarly advantageous in the hospital near Bilbao, where the contagious gangrene was at that time making the most frightful havock, and where of course immediate union of divided parts was above all things to be most ardently desired. I never saw, nor until the publi-

cation of Mr. Guthrie's book, did I ever hear of any bad effects following the use of short cut ligatures. Neither sinuses nor unmanageable sores, as far as my observation has gone, could in any instance be traced to it. I should be much inclined to pursue this mode of tying arteries in every case of operation, particularly since it has been followed by such encouraging results in your hands. At the same time, I beg to say, that my experience of this plan has been very limited. Nor would anything have induced me to address you on this subject, if I had not wished to satisfy the doubts expressed in your paper respecting the fate of the ligature. When the cure proceeds favourably, a small pustule or very minute abscess makes its appearance on the line of the cicatrix, which soon after bursts, discharging a small circle of thread which had formed the stricture on the artery. No doubt there may be cases, where the morsel of thread shall remain close to the vessel, without creating any disturbance whatever; just as musquet balls and other extraneous bodies have done for years in multitudes of instances. But the process I have described is the most usual where the cure goes on well, and beyond all question the most satisfactory to the surgeon."

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I shall take this opportunity of detailing to the

Society the particulars of a case of popliteal aneurism, which, although it affords an instructive caution, might not have been deemed sufficiently important for a separate communication.

A middle-aged man was received into Saint Bartholomew's Hospital, with a large tumor filling up the whole ham, and extending on both sides of the femur towards the front of the limb. It had begun behind; had existed for five months; had grown latterly with great rapidity, and manifestly increased during a few days, for which we had the opportunity of observing it in the hospital. It had a firm fleshy feel, being a little softer at one of its anterior protuberances, than in other parts. It gave him great pain, though it was not tender on being handled; it had caused considerable œdema of the leg and foot, and had rendered the limb completely useless. The surgeons of the hospital, in consultation on this case, viewing it as a large and rapidly increasing fleshy tumor, determined that amputation of the limb, was the only remedy that could be proposed. This I performed high up, having first plunged an abscess lancet into the softest part of the tumor to the whole depth of the blade, without giving issue to any fluid.

I employed pressure in the groin\*, instead of

\* I had an instrument made for this purpose, which did not answer the end, in consequence of some inaccuracy in its construction;

the tourniquet ; the use of that instrument being very unfavourable, where it is necessary to amputate in the middle of the thigh, and in a less degree in other amputations of this limb, by confining the muscles, and impeding their free retractions. This prevents us from sawing through the bone so high as we otherwise might do, and thus increases the chances of that very annoying occurrence, the protrusion and exfoliation of the bone.

The examination of the amputated limb disclosed to us the very unexpected circumstance that this tumor was a popliteal aneurism, containing an immense mass of firm bloody coagulum ; not of that light brown laminated kind, which lines old aneurismal sacs, nor of the loose and soft texture that belongs to recently clotted blood. Hence, although the sac had been freely penetrated by the abscess lancet, no part of its contents escaped.

struction ; but I conceive that a similar one, properly formed, might advantageously supersede the tourniquet in amputations of the thigh. The instrument in question consists of a stout semicircle of iron terminating behind in a flat circular piece, and perforated at its front end by a screw connected to a small iron plate. It is placed on the pelvis like a truss. The posterior flat piece affords the counterpressure, and the screw in front will enable us to compress the artery to any degree that may be required. To the flat piece of iron, by which the artery is to be compressed, it will be necessary to fix a portion of cork, and cover it with leather. The circular part behind must also be suitably padded.

The coats of the popliteal artery, and a continuation of them, such as aneurisms ordinarily exhibit, formed the back part of the sac; while the front and sides were made up of the thigh-bone, the back of the knee-joint, and the neighbouring muscles. The fleshy and tendinous fibres of the vasti were exposed on clearing out the coagulum, which not only covered the back of the femur, but had also advanced on each side towards the front, so as nearly to have insulated the bone. The periosteum was removed at several points.

The popliteal vein, stretched over the back of the tumor, was completely obliterated for some extent. The popliteal artery, similarly extended, was flattened for two or three inches, but quite pervious to the sac, as well as from it; both its openings into the bag presenting the usual appearances.

When the patient was more closely questioned, after this examination of the limb, he stated that the swelling had continued of a moderate size until five weeks previous to his admission into the hospital, when it suddenly enlarged, and that it had increased considerably from that time. The pulsation, which the tumor no doubt had possessed at an early period, had altogether escaped his notice.

I conclude that the case had been originally a popliteal aneurism of the usual kind; that the sac had given way in front, so as to convert it from a

circumscribed into a diffused aneurism, and thus to present to us the deceptive appearance of an immense sarcomatous tumor\*.

Since this case happened, I have heard of two or three other somewhat similar instances.

The very large quantity of the coagulum, and the state of the thigh-bone, may create a doubt whether tying the femoral artery would have been a successful method of treating this case. However, had I suspected the nature of the affection, I should certainly have made the trial; and should have undertaken it with a confident expectation of success, grounded on experience of the efficacy and extent of those natural processes, by which such effusions are absorbed, and such cavities obliterated. I have stated the case to put others on their guard; and shall be happy if what I have said should in any instance prevent so serious a mutilation as that which my patient suffered.

\* An objection may be raised to this explanation, grounded on the general law of the animal economy, in conformity to which aneurisms, as well as abscesses, and tumors in general, are observed to make their way toward the surface of the body; or, in particular situations, towards the cavities of those mucous canals, which have external outlets. To this law there are, however, some apparent exceptions; I say, apparent, because the deviations may arise from some circumstance interfering with the ordinary progress of the tumors, such as a strain, effort, or external violence. I have dissected three or four thoracic and abdominal aneurisms, where the sacs had burst into the cellular substance; and I observed

served the same occurrence in one case of femoral aneurism. The instances in which aneurisms of the ascending or descending aorta burst respectively into the cavities of the pericardium or pleura, do not appear to be exceptions to the general rule; because the surrounding cellular substance, in both these cases, is not sufficiently copious to allow of the formation of a large swelling, the sac therefore gives way when small, and must of necessity burst into the serous cavities just mentioned.

*A CASE*  
OF  
EXTRA-UTERINE FŒTUS,  
CONTAINED IN THE FALLOPIAN TUBE,  
WITH SOME  
OBSERVATIONS,  
By GEORGE LANGSTAFF, Esq.

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*Read June 24, 1817.*

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**I**N the Seventh Volume of the Society's Transactions, I related a Case of an Embryo, with some of its involucra, situated in the fallopian tube ; which occasioned the death of the mother by hæmorrhage from laceration of that tube. The peculiarities were obliteration of the canal from where the ovum was, to the uterus ; and the latter not having prepared a deciduous membrane. Since the publication of this case, I have had an opportunity of examining another, where the reverse of this took place ; the fallopian tube remaining open, and a decidua uteri having been completely formed.

Although it has been said, that extra-uterine



foetuses are not unfrequent, and that the relation of such cases is not of any practical utility, and does not tend to throw light on the physiology of conception ; yet I feel great satisfaction in exhibiting to the Society the preparations of those facts, accompanied with as brief a history of the last case and dissection as I can give. Should it be considered by the Council deserving a place in the Transactions, I shall feel amply repaid for my trouble.

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*CASE.*

A healthy woman, thirty years of age, (a patient of my friend Mr. Snow, surgeon, Highgate,) was suddenly attacked on the 14th of April, 1817, with excruciating pain in the lower part of the abdomen and right groin, succeeded by almost constant distressing vomiting ; which continued sixteen hours, without the least mitigation, although a variety of remedies were employed. After the cessation of pain and vomiting, the patient became extremely restless and anxious ; her pale countenance, and small quick pulse, denoted considerable internal mischief ; and the most probable conjecture respecting the nature of the complaint was, that some large blood-vessel had been ruptured. The abdomen enlarged, and occasioned dyspnoea ; the vital powers gradually yielded, and she expired forty-eight hours from the commencement of the attack.

*Dissection.*

The viscera of the abdomen were completely covered with blood, partly fluid and partly coagulated; and there was a considerable quantity in the pelvis. The whole nearly filled two moderate sized wash-hand basins.

The pelvic viscera were removed, and the cause of death was found to be a rupture of the right fallopian tube in consequence of a fœtus and its membranes having been detained there instead of passing on to the uterus. The ovum was situated about half an inch from the fimbriated orifice of the tube. This canal was greatly enlarged by the ovum, and the part which held it was rendered **extremely thin, more especially at its posterior surface, where it had burst to the extent of half an inch.**

The exact age of the embryo cannot be stated, as the mother's menstrual periods had not been interrupted by this impregnation; but from its size I should suppose it to have been between the sixth and seventh week. The corpus luteum in the right ovarium was very large; and in the left there was the sign of a prior impregnation.

The uterus was somewhat enlarged, and it contained a most beautiful and perfectly formed deci-

dua ; but the os uteri was not closed, nor were the mucous glands distended as in the case I first described.

On the left side, the fimbriated part of the fallopian tube had formed adhesions to the posterior surface of the peritoneal covering of the uterus and the ovarium ; so as to have completely precluded, during the person's life, the exact application of those parts, which is essential to generation.

#### *Observations.*

The above-mentioned appendages of the uterus were not brought into close union, but connected by very delicate longish layers of organized lymph, arranged in a reticulated manner. Such appearances I have frequently noticed on one or both sides of the uterine appendages, more especially in Cyprians ; which perhaps may have been occasioned by frequent excessive excitement. I have also seen similar effects in married women, who have not been prolific ; and from those facts I have no hesitation in saying, that such adhesions form the principal causes of barrenness. I possess several preparations, shewing the variety of ways in which the fimbriated extremities are prevented from embracing the ovaria, by those simple morbid productions of coagulated lymph. In some, the morsus diaboli, as they have been called, adhere to the anterior or posterior surfaces of the ligamenta

lata, or uterus. In others, bands of adhesions are formed between the fallopian tubes, and that part of the peritoneum reflected from the uterus over the rectum; or are seen adhering to that portion which covers the posterior surface of the bladder. I have occasionally found the mouths of the fallopian tubes obliterated.



THE  
HISTORY OF A WOMAN  
WHO BARE A  
SEVEN MONTHS FOETUS,  
FOR SEVEN YEARS,  
WAS DELIVERED OF IT PER ANUM,  
AND COMPLETELY RECOVERED.

COMMUNICATED BY  
DR. ALBERS, OF BREMEN.

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*Read June 24, 1817.*

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WHEN I was some years since in Frankfort, my friend Dr. Melber, (who, as a physician and accoucheur, maintains a very high rank,) related to me the following case, which I have now the honor to communicate to the Medical and Chirurgical Society, in his own words, accompanied with some remarks of my own.

“ The wife of the Citizen K——, of Frankfort, became pregnant for the third time (in November, 1817,) after having had one child; and eleven months subsequently she was delivered of a seven months’ pregnancy distinguished it-

self from the others by pains in, and contraction of, the abdomen ; she suffered also much from constipation and difficult micturition, had much thirst, heat, and an irritated pulse. After many remedies had been fruitlessly used, fomentations of the abdomen and the use of *aq. lauro-cerasi* were found to sooth her most. The complaints, however, had not fully ceased, when the patient, on the 17th of April, 1808, after having, according to her belief, distinctly perceived the motion of the child for many weeks, fell on the stairs, and slid down several steps. For a short time after the fall she experienced no pain, but only remarked a noise within her, resembling that which takes place when any thing falls in an empty vessel. But in half an hour a dreadful pressing and pain took place in the abdomen. I saw the patient soon after, and found her almost insensible from the pain ; she was speechless, moaned incessantly, and pointed with her hands to the abdomen, as the place of her suffering. On examination I found the abdomen hard and contracted, something similar to its state during the sixth month of pregnancy, and so sensible, that she could not bear even the slightest touch ; the pulse was small, contracted and frequent. No external injury was to be found, nor had blood or water passed from the vagina, nor any bleeding, and the use of the most powerful emollient and anodyne medicines, did not procure any relief. The patient returned ; and continued in the same convulsive restless state for several days.

following, and the third day, the symptoms recurred with less frequency and severity; but the excessive sensibility of the abdomen continued longer than a week, and never afterwards wholly disappeared.

As there existed no doubt of real pregnancy, I did not omit examining the patient as soon as the sensibility would any way allow of it. She now asserted, that, since the fall, she perceived no more motion in the child, and that, when she lay down, it fell according to her position. I found the lower segment of the uterus neither extended nor filled; yet the neck of the womb was shortened: the os uteri was opened; a soft, round, broad mass lay behind the hinder part of the vagina in the left side. The child was not in the uterus.

The symptoms which at the beginning were so violent and menacing, disappeared by degrees: the patient recovered visibly, and after a few weeks nothing more was administered. The same result followed after the repeated examinations that were made. By habit, the great sensibility in the left side of the patient's body, which had taken place, and continued from the first moment, became less distressing. I visited her once in the month of October following, and found her very cheerful, domestic affairs, and full of doubt, ours, respecting her preg-

nancy. For the extension of the abdomen had now not only manifestly lessened, but the menstruation had taken place, although irregularly.

I then examined the patient again, and continued in my former opinion, that there must be a five months' fœtus in her body. As it was not necessary to prescribe any thing, I left the patient with the order, that, when she experienced any inconvenience in the abdomen, she should without delay inform me thereof."

So far had my friend entered the present history, six years ago, in his day-book, without hearing further notice either from the patient or her family. In the beginning of July, 1814, a relation of the patient came with a request to him to visit her. She had, as she related to him, experienced occasionally, for more than a year, violent pains in the abdomen, had consulted no physician on that account, but had employed drops, that took away the pain. She had also had her periodical illness regularly although painfully; but for six weeks the pains had been incessant and insupportable, and several pieces of bone, which she gave to him, had passed the rectum, with painful pressing.

Dr. Melber immediately recognized the pieces for the ribs and thigh-bones of an immature fœtus, and now no doubt remained concerning the event which took place in the year 1807. He visited



the patient instantly, and found her sitting up, for in that position she thought the pains were most supportable. She had fallen away very much; the body was very sensible, and in the left side much swelled; the pulse small, contracted, feverish; the thirst was strong, no appetite; the menses had lately appeared, but they were sparing. There was a constant irritation to stool in the rectum, with difficult scanty discharge, which commonly did not appear for many days together. Dr. Melber ordered clysters of oil, or thick gruel, acid drink with a little wine, and for inward use an infusion of Angelica with Elix. acid. Haller. and at night an opiate.

The patient soon improved; she discharged from time to time pieces of bones, and also filaments perfectly putrid, sometimes alone, sometimes with the stool, which spread a carrion-like stench, that scarce could be subdued. The pieces of bone were carefully collected, and dried. In the month of September, an abscess was formed in the abdominal region where the swelling had been the most violent. Dr. Melber believed that by opening it he should evacuate the remainder at once, and ordered it to be fomented. It burst and discharged spontaneously, giving nothing but pus, without remains of the child; and this also diffused the most penetrating smell of putridity, and was such, that the sister who washed the child had been dirtied by it, had her hands

I take the liberty of adding the following remarks to those of my friend.

Suppuration and inflammation are means which Nature avails herself of to get rid of an extra-uterine foetus, by which any one of the proximate parts may be attacked and eaten through.

There are at present, as far as I know, but four ways ascertained, by which this evacuation of the pus and separation of pieces of the bones of the foetus can take place. 1. Through any part of the abdomen, chiefly in the umbilical region. 2. When the pus makes a discharge in the inferior intestines, by which the parts of the child pass out, to which the case now communicated belongs. 3. Also by the vagina the foetus can make itself a way; examples of which, as related by Lanzoni, Smith, and Colman, are not very rare. 4. The most dreadful issue is certainly when the pus has made itself a passage into the urinary bladder, and the foetus falls into it, a case of which horrid description Professor Josephi describes. *Ueber die Schwangerschaft ausserhalb der Gebärmutter, und über eine höchstmerkwürdige Harnblasen — Schwangerschaft insbesondere*; Rostock, 1803.

On this occasion let me be allowed to say a few words concerning the case by Dr. Cheston, which is related in the 5th Volume of the *Medico-Chirurgical Transactions*, of a child retained fifty-two

years after the usual period of utero-gestation, &c. &c., and especially in respect to the question, whether in the first case there related, the child lay in the uterus or not? Dr. Cheston has in the most convincing manner proved, that this question must be answered in the affirmative; so that in my mind not the smallest doubt remains on the subject. Cases of this kind are certainly extremely rare, and I know of only one to be quoted, which Patuna has remarked, and described in the following work: Patuna Barthol. Diss: continens historiam fœtus sine involucris extra uterum inventi, placenta intra uterum hærente. Vienn. 1765.

The same work without alteration was reprinted with the following Title, viz: Barthol. Patuna, Phil. et Med. D. Epist. phys. med. continens historiam Fœtus sine involucris extra uterum inventi, placenta intra uterum hærente. ad Virum cel. Jo. Bapt. Morgagni, &c. Vienn. 1765.

Cases of post-mortem ossification of the fœtus, did not lie in the uterus, but in the abdominal cavity, or in the ovaries, as they have been preserved in the complete catalogue of the Biblioth. med. præs. Fœtus ossificatus, I.

ON THE  
FORMATION  
OF  
NEW JOINTS,

By JOHN HOWSHIP, Esq.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, &c.

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*Read June 24, 1817.*

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**H**AVING in a former communication pointed out the appearances of the superficial deposit, or ossific node, and also adverted to those of the more considerable accumulations of ossific matter which constitute exostoses, I now purpose making some observations upon the production and structure of new joints, as they occur consequent to dislocation.

Upon this particular subject the writers on surgery have been generally silent. Ambrose Paré mentions it, and speaking of dislocations, says that if a reduction cannot be effected, from the bone having grown into the cavity, and from the bone having made itself another joint, it is fallen, forming

to itself a new hollowed cavity, which serves it instead of its natural socket ;" but neither Wiseman, Du Verney, Petit, Heister, Boyer, or Desault, make any mention of this process. Mr. Hunter adverts to it in his lectures, and says that " where joints are not reduced, we have sometimes a new joint formed. An absorption of one or both bones takes place where they are in contact. The adhesive inflammation also takes place, by which means a new socket is formed, which is also covered with cartilage, and is farther covered with a fluid." From this statement it appears that Mr. Hunter had examined such joints while in their recent state, an advantage which has fallen to the lot of very few.

Having already taken a cursory, although I trust a correct and practical view of this subject in another place \*, the following inquiry will be principally directed to the appearances and texture of the newly organized bone, contrasted with the original structure upon which it is deposited.

From the frequent contemplation of a very extensive series of preparations in Mr. Heaviside's Museum, from some of which I had plates engraved in the year 1811, and from subsequent observations, I have since stated what

\* See Practical

formation of a new articulation principally depends on the state of the capsule of the joint; and that although the constitutional powers must be favourable to such an effort, whenever it is attended with success, it can seldom if ever take place where dislocation has been connected with rupture of the capsular ligament.

From the statement lately brought forward of a dissection by Sandifort, in connection with various other observations upon the same subject, I have been led to believe that in the formation of new joints the ossific matter is deposited in the interstices of the cellular structure of the capsular ligament, although as to the surface of such new structure ultimately becoming cartilaginous, I know nothing more than that in one case of preternatural joint, formed in consequence of an ununited fracture of the humerus, I examined the limb after death, and certainly found cartilage upon several points of the opposed surfaces, where the light cancellated parts of the bone had been previously rendered compact by a new deposit of ossific matter\*.

\* Since writing the above, I have had a favorable opportunity for examining the appearance and structure of an artificial joint, in the thigh bone of a rabbit.

The bone had been fractured, and put up in splints, with a view to its union. The limb became tolerably firm; and on the 23d day the animal died, and the limb injected. On dissection, a false joint was found, which instead of uniting the bone, was a mass of soft matter, and the bone was found to be united by a false joint.

In demonstrating the structure of the superficial deposit or ossific node, I observed that the peculiar

ing had formed an artificial joint. The periosteum was not lacerated, but had become very much thickened, and elongated; enveloping the new joint, and forming a strong and moderately vascular capsule.

Several membranous filaments were found connected to correspondent points upon the two surfaces of articulation; these filaments exhibited some few injected vessels, and were considered to be elongations of the membranous expansions within the medullary cavity, which had been partially divided in the experiment.

The most particular attention, however, was bestowed upon the examination of the surfaces of articulation, that I might be enabled to determine clearly and accurately the exact structure.

Those parts of each surface which by the manner of the fracture were at first uneven, still remained so; although I apprehend that the friction of the surfaces of contact would in the course of time have become the exciting cause of the removal of the projecting points.

Fortunately the injection had run particularly well, so that when examined under the microscope, those points where the circulation was actively employed afforded a striking contrast with other parts, that were less vascular.

Both the articulating surfaces were covered with a fine smooth transparent membrane, apparently extended immediately over the surface of the cancelli of the medullary cavity, the texture of which was rendered more compact than usual by newly deposited ossific matter.

It was either into, or behind this membrane, that the ossification had been secreted. The appearance in the interior of the node of numerous small opaque pearls such as are sometimes seen on the surface of the membrane. The membrane was everywhere the injected capillary arteries were shooting forth, and were only perceptible in the interior of the node, and were most at the margin of each of these pearls.

disposition of the spaces between the recent deposit and the bone, is such as to lead me to believe that the ossific matter is not laid down immediately upon the surface of the original bone, but that it is secreted into the texture of the periosteum, but so near the surface of the bone as to leave only the thinnest lamina of the membrane for a separation; and that it is also pretty evident that while some parts of this intermediate membranous texture are progressively removed so as to allow of the new and old ossific matter being brought into contact, other parts assume to themselves new functions, and furnish secretions in effect equivalent to the ordinary medullary contents of the longitudinal canals.

We have already seen in the examinations of bone during its growth, that the vascular secreting membranes within the smallest interstices of the ossific structure, exert, during that period particularly, the power of producing a slow and progressive change in the whole internal structure of bone, in consequence of which the minute tubular spaces of the new deposit are made larger, and the

ultimately opaque, and was elevated into an elastic cartilaginous condition; but in no instance could a single vessel be discerned passing through the spots, although they were examined in every kind of manner, and by various degrees of magnifying power; I therefore conclude that the cartilage is in these cases (as in those of natural bone) a secretion into the fine cellular or reticular texture of the bone, and it is here, as elsewhere, one of those secretions which are not necessarily vascular.



same thing upon the ilium, in a case of dislocated hip.

The specimens were prepared for examination in the microscope by calcination; being subsequently fixed with glue upon a slip of wood, and lastly reduced to a smooth face, and very assiduously cleared out with a fine camel's hair pencil. The views afforded of these preparations by the solar microscope appear to me peculiarly interesting; they indeed suggest so completely every circumstance connected with their structure, that I shall proceed immediately to the explanation of the figures, in reference to which the few circumstances that remain to be noticed with regard to the organization will be most readily understood.

## EXPLANATION OF THE PLATES.



### PLATE IV.

*Fig. 1.* The outline of the preparation from which the piece *a* was removed ; shewing the direction of the section of a part of the old glenoid cavity of the scapula, together with that of the newly formed surface of articulation.

The piece removed by the saw is seen traced at *b* of its natural size.

*Fig. 2.* Shews the appearance of the minute structure of the section, as traced by the solar microscope.

- a.* The surface of the glenoid cavity.
- b.* The margin of the same cavity.
- c.* That part of the cervix scapulæ upon which the new deposit commences.
- d.* The continuation of the line of the original face of the bone, which line is in various points traversed by the progressive communion of structure and function established between the old and new bone.

Circulation has been attended with secretion, and secretion productive of absorption and the consequent formation of numerous cellular spaces for the lodgment of the proper medullary contents; some of the largest of which cellular spaces may be observed to have formed across the line of the formerly compact surface of the original bone.

- e.* The cancellated part of the old bone.
- ff.* The cellular texture of the new structure, demonstrating a less regular arrangement of the spaces in the new work, when contrasted with the old.
- g.* An oblique depression on the external part of the new structure, apparently for the lodgment of a large blood-vessel.

In the preparation of this specimen it met with repeated accidents, by which both its sharp processes were unluckily broken off, and although they were replaced as accurately as possible, the fractures were visible upon the enlarged figure, the traces of which could not have been omitted in the drawing without leaving the delineation of the intimate texture either incomplete or incorrect.

Fig. 1.  
of the hip,



- a.* The surface of the new acetabulum.
- b.* That end of the section terminating upon the original surface of the os ilium.
- c.* The elevated portion, or that formed by the margin of the new cavity.
- d.* The opposite extremity of the section, including part of the new cavity of articulation.
- e.* The cancellous or internal margin of the specimen.

*Fig. 3.* The magnified view of the same piece, traced by the assistance of the solar microscope. Upon this figure all those circumstances just noticed in reference to the specimen from the shoulder joint, are sufficiently distinct and obvious, to explain themselves.



**OBSERVATIONS**  
ON THE NATURE OF SOME OF THE  
**PROXIMATE PRINCIPLES OF THE URINE;**  
WITH A FEW  
REMARKS UPON THE MEANS OF PREVENTING THOSE DISEASES,  
CONNECTED WITH A MORBID STATE OF THAT FLUID.  
BY WILLIAM PROUT, M.D.

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*Read June 24, 1817.*

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SECTION 1. *On the Chemical Properties and composition of some of the Proximate Principles of the Urine.*

**I** PURPOSE to confine my attention at present to *Urea*, *saccharine matter*, and the *lithic* or *uric* acid. The other principles, and particularly the *phosphates* and *oxalic acid*, are omitted, from the uncertainty which still hangs over their nature.

*Urea.* This principle, in combination with many others, was first pointed out by Rouelle, Jun<sup>r</sup>. in 1773, under the name of the "Saponaceous extract of urine." It did not, however, attract much attention till many years afterwards, when Mr. Cruickshanks described its properties more minutely, and indeed may be almost said to have re-discovered it. Fourcroy and Vauquelin extended the research, and gave it the name it now bears. Its properties have been generally ascertained in the present day,

with the exception of Berzelius and more recently Thenard\*. Berzelius appears to have been the first who obtained it in a separate state, and consequently who has described its properties with any degree of accuracy. He observes, that the urea he obtained was "void of colour, and formed very distinct prismatic crystals like nitre †." How he obtained it in this state, or how far he carried the investigation of its properties I do not know, but this observation of his first induced me to set about obtaining it in a similar state, which, after a good deal of trouble, I effected. Thenard in his late work describes this substance as "crystallisée en lames carrées, ou en feuilles quadrilatères allongées dont l'épaisseur varie de 1 à 5 millimètres; elle est sans couleur, transparente, assez dure, d'une odeur fraîche, un peu piquante, et urineuse, son odeur rappelle aussi celle de l'urine: sa pesanteur spécifique est plus grande que celle de l'eau: elle est sans action sur les couleurs bleues vegetales. Mise en contact avec l'air elle en attire l'humidité et se resout en liqueur; abandonnée à elle-même cette dissolution se décompose peu à peu, donne lieu à de l'acétate et du sous-carbonate d'ammoniaque, et laisse dégager des gaz très fétides, &c ‡."

\* I have been very lately informed by M. Gay Lussac that Vauquelin has obtained this principle in the same pure state in which I am about to describe it.

‡ See his View of the present State of Animal

I first obtained this substance in a state of purity by the following process upwards of three years ago, when it was exhibited at some lectures I gave on animal chemistry.

*Method of obtaining urea.* Fresh urine is to be carefully evaporated to the consistence of a syrup, and to this, when quite cold, pure concentrated *nitric* acid is to be added by degrees till the whole becomes a dark coloured crystallized mass, which is to be slightly washed with cold water, and suffered to drain. To this mass is then to be slowly added a pretty strong solution of the subcarbonate of potash or soda till the whole becomes neutral, and the solution thus formed is to be carefully concentrated by ~~evaporation, and set aside~~, in order that the nitre formed may crystallize, and thus be separated. To the impure solution of urea left, animal charcoal is to be added in such quantity as to absorb the whole fluid and form a thin paste, which may be suffered to lie for a few hours. Cold water is to be added to this paste which separates the urea, and the colourless solution thus obtained is to be slowly evaporated to dryness at a low temperature. The residue is then to be boiled in water, and the solution filtered, and the water evaporated off, and leaves the urea in a solid state, and of the other salts which are present in the urine. In this state of solution the urea may be readily obtained by the addition of alcohol, it is generally ne

of crystallization from the alcohol two or three times\*.

*Properties of urea.* Urea most frequently assumes the form of a four-sided prism. Its crystals are transparent and colourless, and have a slight pearly lustre. It leaves a sensation of coldness on the tongue like nitre. Its smell is faint and peculiar, but not urinous. It does not affect litmus or turmeric papers. It undergoes no apparent change on exposure to the air, except in very damp weather, when it slightly deliquesces, but does not seem to be decomposed. Exposed to a strong heat it melts, and is partly decomposed and partly sublimes apparently unaltered. The specific gravity of its crystals is about 1.350.

Water at 60° dissolves more than its own weight of urea; and the solution exposed to the air for several months underwent no change. Boiling water dissolves any quantity of it whatever, and the urea does not appear to suffer any change at this degree of temperature.

Alcohol (sp. gr. .816,) at a mean temperature, dissolves about 20 per cent., and at a boiling temperature more than its own weight, and the urea on cooling in its crystalline form. It is

a complicated process, but urea  
is obtained in any quantity by



very sparingly, if at all, soluble in sulphuric ether or the essential oil of turpentine, though these fluids are rendered opake by it.

The pure fixed alkalies and alkaline earths decompose urea, especially when heat is applied and water present: the result is chiefly carbonate of ammonia. It unites with most of the metallic oxides: the combination with the oxide of silver is greyish, and detonates on being heated, and the oxide is reduced. It does not seem, however, to be alone capable of decomposing any metallic salt; but, in order to effect the union in question, the aid of double affinity is necessary.

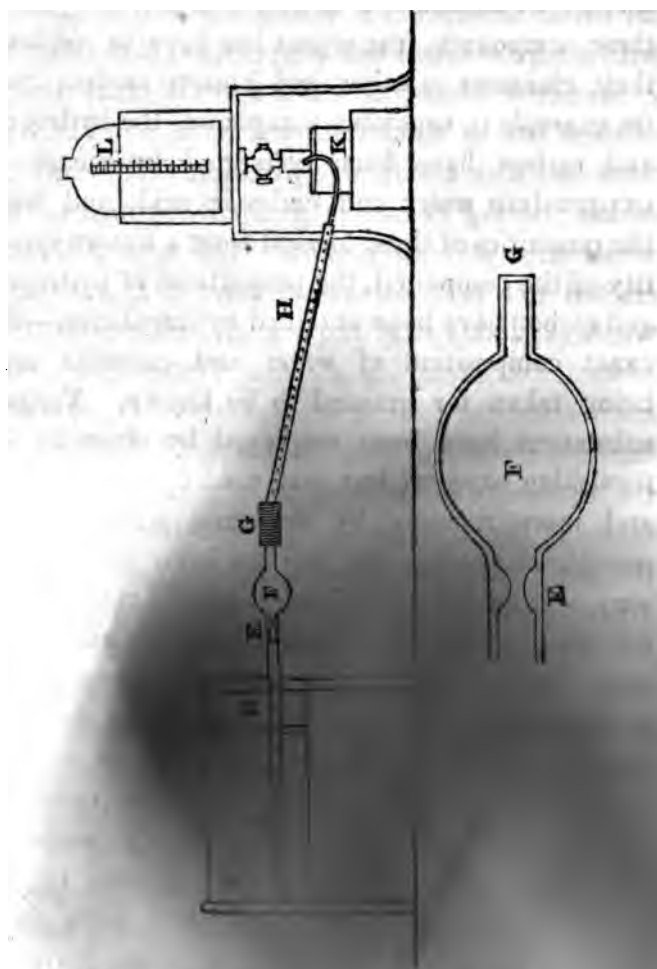
It combines with nitric acid and forms a crystalline compound, but sparingly soluble in water, and which has been long known to chemists. It forms also a similar compound with oxalic acid. In neither of these compounds are the acids neutralized.

Such is a brief sketch of the properties of this substance which I trust will be considered as sufficient for this place. We come now to consider the nature of its ultimate composition.

*Analysis of urea.* Before I proceed to this part of my subject, I shall briefly mention once for all the general principles of the analysis of organic substances, and describe the apparatus I have employed for the purpose. The general nature and composition of organic compounds have been long

understood. Those from the vegetable kingdom are usually composed of three elements, hydrogen, carbon and oxygen, and those from the animal, of four, hydrogen, carbon, oxygen and azote. In all attempts therefore at the analysis of these compounds, the object has been to combine their elements in other and known modes; thus for example in vegetable compounds the hydrogen and carbon have been converted by means of oxygen into water and carbonic acid, and from the quantities of these formed from a known quantity of the compound, the proportions of hydrogen and carbon have been obtained by calculation—the exact composition of water and carbonic acid being taken for granted to be known. Various substances have been employed by chemists for furnishing oxygen; but that used by Gay Lussac, and more recently by Berzelius, was the oxy-muriate of potash, and this has been found to do very well for the analysis of vegetable compounds, but for animal compounds it does not answer so well. This arises from the peculiar property which azote possesses of combining with many different proportions of oxygen, so that there is no certainty of obtaining the same uniform resulting product. After many unsatisfactory attempts therefore with this salt, I had recourse to the black oxide of copper, which had been very lately used by Gay Lussac for a similar purpose, and which I found to answer completely. This  
 ture at which common glass  
 ily parts with its oxy-

gen to hydrogen and carbon but not to azote\*; hence the latter principle is thus obtained in its pure and uncombined state, and its quantity is rendered capable of being accurately ascertained.



\* If the heat be raised too high, it will decompose the substance with some substances. To prevent this, Mr. Berzelius recommends that copper filings should be placed around the tube. I have sometimes had this done, but in general have not found it necessary.

The apparatus I employed was very simple. *A* (*Fig. 1.*) is a stout glass tube about a foot long, with a bore of about one fourth of an inch, into which the substance to be analysed was introduced mixed with the oxide of copper. This tube was wrapped round with a narrow slip of thin copper sheet to prevent its expansion and bursting. *B* is a sort of cradle made of sheet iron in which the fire is made, and which is furnished with a moveable partition *C*, by shifting which the fire *D* can be gradually applied to the whole tube *A* in succession. The tube *A* is contracted to a very narrow aperture at *E* and afterwards expanded at *F* into a small ball, represented of its actual size in *Fig. 2.* *G* is a caoutchouc tube connecting the tube *A* with another, *H*, containing dry muriate of lime, and which is bent up at the extremity in order to be introduced into the vessel *K* containing mercury, and thus to convey the gases formed into the mercurial gasometer *L*. At the end of the operation it is obvious that the whole of the water formed will be collected between *E* and *H*, and that its weight can be thus easily ascertained, while the gases evolved will be collected in the gasometer *L*. In general, however, separate experiments were made for determining the quantities of water and of gases formed, and in the latter case a small bent tube, to convey the gas to the gasometer, was connected at once to the tube *A* at the aperture *E* by means of the caoutchouc tube. The quantity of water hardly be observed, except in justice

to Berzelius, that the apparatus here described is only a simplified modification of that used by him for a similar purpose.

The quantity of the substance analysed was in general *four* grains, which was mixed with more or less of the oxide of copper, according to the nature of its composition. The experiments were several times repeated with every possible attention to those circumstances, which might influence the results. In ascertaining the quantity of water and of gases formed, also, the greatest care was taken to obtain correct results, for which purpose a very delicate balance, with weights adjusted by myself from platina standards made by Troughton, and a gasometer likewise graduated by myself were employed. All the substances were dried in a vacuum with sulphuric acid, at a temperature of about 200°.

It may be also proper to observe that the numbers representing the *atoms* or *combining weights* of the elementary substances, differ slightly from those commonly assigned to them, and are the same as those proposed in an anonymous paper published some time ago in the *Annals of Philosophy*\*: that is to say,

\* See Thomson's *Annals of Philosophy*, vol. iv. p. 321.

Hydrogen is represented by	1.25
Carbon . . . . .	7.5
Oxygen . . . . .	10
Azote . . . . .	17.5

I now return to my subject. Four grains of *urea* yielded upon an average when treated as above:

Of water . . . . .	2.45 grains
Carbonic acid . . . . .	6.3 cubic inches*
Azote . . . . .	6.3 cubic inches

Hence it consisted of

Hydrogen . . . . .	.266
Carbon . . . . .	.799
Azote . . . . .	1.866
	<hr/>
	2.933
Oxygen . . . . .	1.066
	<hr/>
	4.000
	<hr/>

which correspond with

2 atoms or 2 volumes of hydrogen	2.5	} of or per cent. of	hydrogen	6.66
1 atom or 1 volume of carbon	7.5		carbon	19.99
1 atom or $\frac{1}{2}$ volume of oxygen	10.0		oxygen	26.66
1 atom or 1 volume of azote	17.5		azote	46.66
	<hr/>			
	37.5			<hr/>
				100.00
				<hr/>

*Nitrate of urea.* The analysis of this singular compound, I thought might be useful in enabling us to estimate the quantity of urea present in any

\* Temperature 60°. Pressure 29.5 inches, and the same is  
of all the subsequent experiments.

given specimen of urine. With this view the following experiments were made.

Twenty grains of common nitrate of urea were digested with the same quantity of carbonate of lime. The quantity of the carbonate of lime dissolved was 8.7 grains.

Ten grains of urea treated with nitric acid yielded *about*\* 18.5 grains of nitrate of urea.

Hence nitrate of urea is composed per cent. of  
 Nitric acid 47.37 or 1 atom  
 Urea - 52.63 or 2 atoms.

The nitric acid is quite delicate enough as a test of urea for all common purposes, if properly managed. The oxalic acid is more delicate than the nitric, though it is more tardy in manifesting its effects.

Analysis of *sugar*. Four grains of pure crystallized sugar yielded, upon an average, of

Water	2.45 grains
Carbonic acid	12.6 cubic inches

\* I have made this experiment many times, and with great accuracy, and can therefore be entitled to state that it is not a mere hypothesis, but that it is a fact. It corroborates the theory of the formation of urea, more than any other experiment, and I can prove this.

Hence it consisted of

Hydrogen	. . .	.266
Carbon	. . .	1.599
		<hr/>
		1.866
Oxygen	. . .	2.133
		<hr/>
		4.000
		<hr/>

which correspond with

1 atom or 1 volume of hydrogen	1.25	} or per cent. of	hydrogen	6.66
1 atom or 1 volume of carbonate	7.5		carbon	39.99
1 atom or $\frac{1}{2}$ volume of oxygen	10.0		oxygen	53.33
	<hr/>			<hr/>
	18.75			100.00
	<hr/>			<hr/>

*Diabetic sugar* on being repeatedly submitted to analysis, produced so nearly the same results that it is impossible not to suppose its composition to be similar to that of common sugar. The only differences observed, were that diabetic sugar generally yielded a little azote, and for the most part a little more water (about one tenth of a grain) than common sugar, and to these slight differences we are probably to attribute its different external characters \*.

\* An easy as well as speedy mode of obtaining diabetic sugar in a state of purity, is, to wash and digest it repeatedly in cold alcohol, till that fluid comes off colourless; and afterwards to distill it in the same fluid by means of heat. By these processes the foreign matters are separated, and the sugar will crystallize from the alcohol, and if the operation of crystallization be repeated, become very pure.



*Sugar of milk* also yielded very nearly the same results. Hence I am inclined to think the primary and simple saccharine principle is composed of one atom of each element, and that the varieties in its external characters are to be attributed to the influence of the presence of minute portions of foreign matters, analogous, for example, to what occurs in the inorganic kingdom, in the mineral called *aragonite*.

Berzelius found four grains of *common sugar* to yield of

Water	.	.	2.4	grains
Carbonic acid	.	.	6.04	grains

The same quantity of *sugar of milk*, according to this accurate chemist, yielded, of

Water	.	.	2.44	grains
Carbonic acid	.	.	5.80	grains :

results that correspond very nearly with those given above \*.

*Analysis of lithic acid* . . . . .  
*lithic acid* produce . . . . .

\* See *Annals of Philos.* . . . . .

† I have adopted the of . . . . . substance, for the reasons . . . . . work. I also take this opportunity . . . . . debted to that gentleman for the . . . . . ral rare varieties of calculi, espec . . . . . alysis of which, I hope shortly to lay

Water . . .	1.05 grains
Carbonic acid .	11 cubic inches
Azote . . .	5.5 cubic inches

Hence it consisted of

Hydrogen . . .	.11
Carbon . . .	1.37
Azote . . .	1.61
	<hr/>
	3.09
Oxygen . . .	.91
	<hr/>
	4.00
	<hr/>

which correspond with

1 atom or 1 volume of hydrogen	1.25	} or per cent.	hydrogen	2.857
2 atoms or 2 volumes of carbon	15.00		carbon	34.286
1 atom or $\frac{1}{2}$ volume of oxygen	10.00		oxygen	22.857
1 atom or 1 volume of azote	17.50		azote	40.000
	<hr/>			<hr/>
	43.75			100.000
	<hr/>			<hr/>

M. Berard has lately published analyses of several animal substances \*, and among others of *urea* and *lithic acid*. As the above results were obtained long before the appearance of M. Berard's paper, I shall content myself with merely referring my readers to it, and observing that some of his results coincide with mine, while others differ from

The following Table represents a summary view of the above results.

Elements.	Urea.		Sugar.		Lithic acid.	
	per atom	per cent.	per atom	per cent.	per atom	per cent.
Hydrogen	2.5	6.66	1.25	6.66	1.25	2.85
Carbon	7.5	19.99	7.5	39.99	15.0	34.28
Oxygen	10.0	26.66	10.0	53.33	10.0	22.85
Azote	17.5	46.66			17.5	40.00
	37.5	100.00	18.75	100.00	43.75	100.00

*General Conclusions.* 1. The atomic theory or theory of definite proportions, holds good in all these instances. A circumstance which renders it probable, that this will afterwards be found to be the case in all substances capable of crystallizing or forming crystalline compounds, both in the vegetable and animal kingdoms.

2. The above compounds appear to be formed by the union of more simple compounds, as urea of carburetted hydrogen and nitrous oxide, lithic acid of cyanogen and water, &c. circumstances which render it almost certain that their artificial formation falls within the limits of common chemistry.

3. The remarkable relation found to subsist between urea and sugar, seems to explain in a very satisfactory manner the phenomena of diabetes, which may in fact be considered to consist in a depraved secretion of urea. Thus the weight of the atom of sugar *is just half* that of urea: the *absolute quantity of hydrogen* in a given weight of both *is equal*, while the *absolute quantities* of carbon and oxygen in a given weight of sugar are precisely *twice* those in urea.

4. Lithic acid is a substance quite distinct from urea in its composition. A fact which explains an observation I have often made, that an excess of urea generally accompanies the phosphoric diathesis, and not the lithic. I have several times seen urea so abundant in the urine of a person where the phosphoric diathesis prevailed, as to crystallize spontaneously without being concentrated by evaporation, on the addition of nitric acid.

I shall forbear at present to notice other interesting circumstances suggested by the present inquiry, lest, in this early stage of it, they might be considered as visionary and hypothetical. These analyses, however, appear to me to afford glimpses of laws that will hereafter be found to influence the whole system of Nature's operations.

SECTION 2. *Some remarks upon the efficacy of general remedies, and especially purgatives, in ensuring a healthy state of the urinary secretion, and thus in preventing calculous affections.*

The observations I have to offer on this head are not to be considered as deductions from those contained in the preceding section. Practical facts in general have not been deduced from physiological knowledge, but have usually been the result of accident or blind experiment. Even in the present improved state of anatomy and physiology, we cannot pronounce *a priori* upon a single effect which any new substance will produce upon the animal economy. Such reflections are doubtless mortifying to the cultivators of these branches of knowledge, especially when aggravated by the sneer and *cui bono* of ignorant empiricism; but the series of cause and effect, which at present separates physiological from practical knowledge, cannot be *infinite*, and by gradual approximations from either extreme, the whole must sooner or later be explored, and "reason will become triumphant."

*Uromancy*, or the practice of judging of the nature of disease, from the appearances of the urine, seems to be almost as old as medicine itself. The opinions of the ancients, however, on this subject, were vague and often ridiculous, and it is to mo-

dern chemistry entirely, that we owe the means of making accurate observations upon the urine. Some years have now elapsed since I more particularly turned my attention to the pathology of this secretion, and one of the earliest observations I made (which has doubtless been often made by others) was the striking effect produced by a common laxative, in restoring my own urine from an unnatural and turbid state to its proper colour and transparency. After having made this remark, it required but little reflection to arrive at the conclusion, that the cause, whatever it might be, which rendered laxatives necessary, contributed chiefly to produce this unhealthy state of the urine; and from the attention which had been lately paid in this country to the diseases of the digestive organs, it was easy to refer this common cause to derangements in the functions of these organs. But being aware of the close affinity which subsists between urinary deposits and urinary concretions, the question here naturally occurred, if purgatives have the power of removing urinary sediments in common cases, would they not have the power of removing them in extreme cases, or in gravelly and calculous affections? From want of proper opportunity of verifying these speculations, they were almost forgotten, till I was introduced to Dr. Scudamore, who I found entertained similar views, and had prosecuted the subject much further than I

had done \*. This gentleman, in his late publication, has indeed anticipated most of what I had to say upon the subject ; a circumstance that will render it unnecessary for me to enter into details here, and limit my views chiefly to the extensive circulation of general principles only, through the medium of this Society.

Vitiated secretions of every description must be the result of general or of local causes, or of both united. But when we reflect how little liable the secreting organs are to be affected, and how seldom, in point of fact, they are affected, except through the medium of the general health, we are naturally led to look here for the primary cause of their derangement. The inference is obvious. Remedies, no matter of what description, that have a tendency to restore the general health, must have a tendency to insure the due performance of all the bodily functions, and secretion among the rest. I need not enlarge here upon principles which are well understood, and the elucidation and application of which are justly ranked among the greatest discoveries of

\* I may here take the opportunity of stating, that I am indebted to this gentleman for the opportunity of examining a great number of specimens of morbid urine, as well as for the free communication of the results of his observation and experience upon the subject in general.

modern medicine; but shall merely observe, that by paying proper attention to the general health, and especially to the functions of the stomach and bowels, I have in numerous instances witnessed the speedy removal of urinary deposits, and the complete restoration of this secretion to its natural appearance and properties. This has been remarkably the case in children, in whom the phosphoric diathesis most generally prevails. The remedy employed has been for the most part a combination of calomel and rhubarb, in connection with which, others were occasionally exhibited as circumstances rendered it necessary. In adults, as is well known, both the phosphoric and lithic diatheses prevail, and often alternate in the same person. I have, however, generally, seen both equally yield to the same principles of treatment, and sometimes even to the same remedy, and am disposed to think, therefore, that they are more intimately connected than commonly imagined. Some differences, however, must be admitted to exist between causes which can produce such different effects, though I must confess myself unable, after a good deal of attention to the subject, to point out, or even to offer an opinion of their nature. As to particular remedies, they will readily occur to the practitioner who keeps the above-mentioned principles in view. I may, however, observe, that when laxatives have been particularly indicated, I have been accustomed to exhibit a combination of the pil. hydrarg. with



aloes, or the ext. colocynth. c. with the best effect. Remedies determining to the skin and kidneys are often useful adjuncts, and a regimen in strict unison with the same general principles should be adopted.

I need hardly remark, that the above observations are almost entirely confined to diseases of the urine, while as yet they are merely constitutional, and have not produced local disease, or actual calculus. To the treatment of such unfortunate cases, I have nothing to add to the little already known. When a calculus is once formed, its further enlargement is probably a common chemical process, and will proceed whether the urine be healthy or not, for all urine naturally contains the ingredients most commonly met with in calculi. Something, however, may be possibly done by general remedies in retarding its growth; but this will only prolong the patient's misery, who had much better, therefore, submit at once to the operation, and by subsequent attention to the above principles, prevent the future formation of another.

I have had no opportunity of applying these principles to diabetes; but when this disease is fairly formed, it seems to become in a great degree of a local nature; hence probably they will be inapplicable.

I shall close these remarks with a few observations upon the *chemical* mode of treating calculous affections.

The principles of the chemical treatment of calculous affections are well understood, and have been very lately ably explained by Dr. Marcet \*. Acid and alkaline remedies are doubtless often productive of much good in diseases of this description. Alkaline remedies in particular are universally admitted to have the property of lessening that excessive irritation commonly attending such affections. From all, however, that I have been able to observe, I am obliged to confess, that it appears to me that the good effects both of acid and alkaline remedies cannot be altogether satisfactorily explained upon chemical principles. Indeed Dr. M. admits this to be the case in a certain degree, and I am also borne out in this opinion by many facts on record: thus Berzelius informs us, that he exhibited large doses of the sulphuric, phosphoric, and acetic acids in succession to a patient whose urine was alkaline and deposited the phosph<sup>ate</sup>~~oric~~, but without the least good effect, till the phosphoric acid was given in such quantity as to prove laxative, when "the urine became acid, and deposited uric acid, which

\* See his "Essay on the Chemical History and Medical Treatment of Calculous Affections."

continued as long as the laxative effect continued, and no longer, although the dose remained unaltered \*." Alkaline remedies also are stated by Dr. Marcet to "often allay the irritation of the bladder, and promote the flow of urine, even when, from the chemical composition of the concretions, they can be of no use as solvents." So also magnesia, of which so much has been said, seems to me to produce little satisfactory good, unless its laxative operation be secured. But when we reflect that all urine (except perhaps in extreme cases of diabetes) contains both lithic and phosphoric acid, although only one of the diatheses generally prevails at the same time, the conclusion is probable, reasoning merely *chemically* upon the subject, that the exhibition either of acid or alkaline remedies may produce harm as well as good: and if we take into account also the capricious nature of secretion, and the frequent alternation of these two diatheses in the same person from unknown causes, it becomes an exceedingly difficult task to adjust the remedy to the disease; and the *chemical* probability will be, that the disease will ultimately be increased, instead of diminished. Lastly, the *object* of the chemical practitioner is at best but of a secondary description, namely, to prevent the effects of disease rather than to remove it. From these

\* See his "View of the Present State of Animal Chemistry," p. 107.

and other circumstances, therefore, which might be mentioned, I have been induced to consider chemical remedies as palliatives only, and to explain their acknowledged good effects even in this way, rather upon their general than their chemical operation; but this opinion, as well as the others advanced above, I submit to the medical world with the greatest deference.

OBSERVATIONS  
ON THE  
TREATMENT  
OF THE  
VENEREAL DISEASE,  
WITHOUT MERCURY.

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*Read June 24, 1817.*

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**T**HERE are no diseases to which the male sex is so very obnoxious as those of the sexual organs, and there are none which have more occupied the attention of surgeons ; yet there is not a subject in surgery of equal importance, on which less has been written since the time of Mr. Hunter. We find that those who have had the greatest opportunities of acquiring knowledge, have for the most part refrained from communicating to the public the results of their observations ; and that this has arisen rather from the difficulty of the subject than from its being so thoroughly understood as to re-

quire no comment, will be immediately acknowledged by every one of discernment and experience. In offering a few observations on the treatment of diseases acquired through promiscuous intercourse, I wish I could think they would elucidate a subject beset with so many difficulties; but the more I consider in which way this may be accomplished, the greater I find the obstacles to be surmounted, except I could at once adopt the opinions of a French anonymous, but very ingenious author \*, “ that there is not, nor ever was such a disease;” but to this opinion there are equally insurmountable facts to be opposed. Certain however we may be in this subject of intricacies, that the venereal disease has, within these few years, totally altered in many of those properties and effects, which are called specific; or that the greater part of the opinions which have been commonly entertained are erroneous.

In offering these remarks, I beg to be considered as merely giving a few slight sketches of opinions and facts which may be hereafter confirmed, filled up, or even abandoned, as circumstances and further observations may render necessary, and I shall confine myself as much as possible to facts, and enter as little into the consideration of opinions, that are well known and usually entertained.

\* Sur la non-existence de la Maladie Vénérienne. Paris, 1811.

On the continent in general, little attention is paid to the appearance of primary sores : if a man have had a suspicious connexion, followed by ulcers on the glans penis, or prepuce, or even a gonorrhœa, he is at once declared to be infected with the venereal disease ; but this does not lead in general in Italy, or in the south of Europe, to the exhibition of mercury or any other specific. In France, and particularly in Paris, the contrary is the general practice : the patient is placed on the use of the oxymuriate of mercury, and after taking about thirty-two *portions*, in half doses, twice in the day, which generally occupy the same number of days, he is considered free from disease, and this will in most cases be true in all kind of sores which have originated from sexual intercourse ; but if the ulcers should not heal in this period, or secondary symptoms supervene, he frequently continues the medicine for an unlimited time. In doing this, the Parisian surgeons are however acquainted with a fact, which has, until very lately, been denied in England, viz. that every kind of ulcer is curable by common means, and M. Cullerier, the first surgeon in the Venereal Hospital at Paris, demonstrates the possibility of doing so every year to his class ; but, after the ulcers have healed, he puts each patient through the usual course, to prevent secondary symptoms.

Lagneau \*, the latest French author who has

\* *Exposé des Symptomes de la Maladie Vénérienne à Paris, 1815.*

written on the venereal disease, although he acknowledges gonorrhoea may have a different origin, still endeavours to prove the identity of gonorrhoea and chancres in the greater number of cases as syphilitic affections, from the circumstance of several females having been infected by the same man with both complaints, and the same occurring in several males from communication with one woman, and he inculcates in consequence the propriety of treating them by mercurial preparations. In Great Britain, they are usually considered as distinct diseases; but in whatever way we are disposed to view the subject, it is hardly possible to reconcile the different facts which have been adduced, without admitting that ulcers will arise on the penis from the matter of gonorrhoea; that gonorrhoea will in turn be caused by the matter of these same ulcers, and that both occur in consequence of promiscuous or uncleanly intercourse. That many of the ulcers produced in this manner will occasionally assume every character of chancre, and cannot be distinguished from it, I am perfectly satisfied of, from repeated observation; but I am equally as certain that a gonorrhoea in men, with the worst appearances and symptoms, can, and often does, arise from irritating causes common to parts free from any specific disease or poison, is not distinguishable from one that has arisen from promiscuous intercourse, and that both complaints are curable in the same way and without mercury. It may be asked, can gonorrhoea, or the ulcers resulting from the matter of



gonorrhœa, produce symptoms of constitutiona derangement? The evidence of authors is at variance on this subject, and I am inclined to believe, as a general rule, that they do not; although I am by no means disposed to affirm, that they cannot, under particular circumstances of constitution, produce such symptoms; but in allowing that they do sometimes follow, I am much inclined to believe, that they become serious only in consequence of the improper exhibition of mercury; and it is from the cases that have made me allow, that secondary symptoms, such as inflammation and ulceration of the tonsils, and eruptions on the skin, do follow gonorrhœa, that I have also drawn this inference.

In the British empire, surgeons, so far from confounding these complaints, have on the contrary been long accustomed to make distinctions between the different kinds of ulcers, to which the sexual organs are liable. Mr. Hunter endeavoured to point out the ulcer which he supposed to possess specific qualities, and to be the cause of what are called the secondary symptoms of syphilis; and since his time the characters he has given have been supposed to be truly diagnostic and infallible signs of a disease that required a course of mercury for its cure. His opinion has indeed so far regulated the conduct of practitioners in general, that the greater or lesser resemblance of sores to the assemblage of appearances he has described,

has decided whether a course of mercury was or was not necessary. It having been taken for granted that mercury was the only cure, that a sore possessing these characters must contaminate the habit generally unless it were prevented by the exhibition of the appropriate remedy, and that it could not be cured without it. That this was, indeed I believe, is the opinion of the most eminent surgeons in the empire, will not be denied, and I am acquainted with *none* of whose opinions records are preserved, either in their writings or by their pupils, with the exception of Mr. Abernethy, who do not allow, even if they do not support this doctrine.

Although it was supposed that a chancre was the true syphilitic ulcer, when possessing the properties I have mentioned, it was allowed, and the oldest records of surgery confirm the fact, that many other kinds of ulcers arise from promiscuous intercourse, which do not require mercury for their cure. Attempts were then made to distinguish these also; and Mr. Abernethy, Mr. Carmichael, and others, have been very successful in their endeavours. But the matter did not rest here; reference was not made alone to primary ulcers; the different secondary symptoms were also considered, and attempts again made to distinguish those resulting from each particular kind of ulcer. In this manner several diseases, supposed to depend upon different poisons, have been described, which, if they did

actually exist, would be much more dangerous than syphilis itself, which all agree in thinking curable by mercury properly exhibited, whilst the other complaints are, at the same stage of the disorder, aggravated by its exhibition.

In consequence of these opinions, it became desirable to ascertain, at an early period, whether an ulcer was a chancre or not; and many surgeons prided themselves on their peculiar talent in distinguishing those ulcers, which absolutely required the use of mercury for their cure, from those that did not; but the value of this prescience will be more duly estimated, now that it has been ascertained that every sore, of whatever description it may be, will heal without its use, provided sufficient time be granted, the constitution be good, the patient regular in his mode of living, and that attention be paid to cleanliness and simple dressing, and to keep the patient in a state of quietude.

During the last eighteen months in the York Hospital Chelsea, Mr. Dease, Dr. Arthur, Dr. Gordon and myself have been in the habit of treating all cases of ulcers on the penis, whatever form or appearance they might have, by simple mild means, that is, by dry lint, or ointments or lotions for the most part not containing mercury, in order to obviate the objection that might be made to the application of it in any form; and of near one hundred cases which have been treated in this

manner, all the ulcers healed without the use of mercury; and among them there were of course many of every description, from the common ulcer, without excavation or induration, to the solitary ulcer possessing the true characteristics of chancre. Since Mr. Rose of the Guards began to treat his people without mercury, and the practice was adopted at the York Hospital, it has been followed at several of the hospital stations, at Dover, Chatham, and Edinburgh, and in different regiments at home and abroad, especially the 57th and the staff corps of cavalry in France. From these hospitals I have seen the reports of near 400 cases more, which have been treated with the same result as far as regards the cure of primary ulcers; each ulcer appears to have run a certain course, which, as to extent, was much the same as in one of the same appearance where mercury was supposed to be necessary; and at an indefinite period of time, to have taken on a healing action, and in the greater number of instances, skinned over rapidly, leaving a mark or depression shewing a loss of substance. With us, where the ulcer had the characteristic appearances of chancre, dry lint alone was generally applied to it; where these signs were less prominent, a variety of applications were used; but there were a great number of sores both raised and excavated, on which no application made the least favourable impression for many weeks. They did, however, yield at last to simple treatment remaining for a considerable time

nearly in the same state, several of them having become sores of a large size previous to, or in the first days after their admission. If they were ulcers without any very marked appearance, and did not amend in the first fortnight or three weeks, they generally remained for five or seven weeks longer; and the only difference, in this respect, between them and the raised ulcer of the prepuce was, that this often remained for a longer period, and that ulcers, possessing the true characters of chancre, required in general a still longer period for their cure, that is, from six, eight, to ten, twenty, and even in one case twenty-six weeks, healing up and ulcerating again on a hardened base. Those that required the greatest length of time had nothing particular in their appearance that could lead us to distinguish them from others of the same kind that were healed in a shorter period; neither were any of these ulcers followed by a greater number of buboes, nor did they suppurate more frequently than in the same number of cases treated by mercury; on the contrary, the ulcers were not so frequently, on the average, followed by them, neither did they so often suppurate; but this may also be attributed to the antiphlogistic means employed both generally and locally for their relief.

The fact then of the possibility of curing every kind of ulcer on the genitals without mercury seems to be fully established; but the question of

time is very important, for I have every reason to be certain from former experience, that almost all these protracted cases would have been cured in one half or even one third of the time, if a moderate course of mercury had been resorted to after common applications had been found to fail; and I have reason to think, from the treatment of other cases, that the duration of many of them might also have been shortened by the regular exhibition of cathartic medicines combined with sudorifics.

The great question however is, were these people, whose ulcers were healed under this treatment, more liable to secondary symptoms than if they had been treated by mercury? According to the opinions commonly entertained, there ought not to be a doubt on the subject; but these opinions have been formed rather on what it was supposed must follow, than on what has been actually observed to follow. From the nature of the service, it has not been possible for us to trace with sufficient exactness the whole of the persons that have been treated in the York hospital, although many remained for several months under observation; but of the whole treated, only six cases have been noticed in which symptoms strongly resembling those of syphilis made their appearance, although it is possible slighter ones not requiring medical assistance may have occurred. Of these cases, two had ulcerated throats, combined eruptions. In one, the papular eruption

appeared before two ulcers, one a raised ulcer of the prepuce, the other a chancre on the corona glandis, had healed; one had a syphilitic leprous eruption, and being a private patient was cured by mercury and the decoct. sarsaparillæ. Another of the same description was cured without either of these remedies.—Five of the six, then, were cured by simple means, such as cathartics, antimonial, sarsaparilla, and the warm bath, and one by the assistance of mercury.

In none of these cases were the bones affected; it is but proper, however, to remark, that several cases were admitted during this period, in which a few mercurial pills had been taken, and the mouth not been affected, and in which the primary symptoms were followed by eruptions both papular and scaly, by ulcers in the throat, by nodes, and in one case by inflammation of the periosteum covering the bones of the nose, and ulceration of the septum nasi, although mercury was resorted to for its cure; but these cases as well as many others of disease in which mercury had been frequently or irregularly used, although cured, are not included in these observations, as the exhibition of even a small quantity of it in the first instance, might be supposed by some to have a certain degree of influence on the symptoms which subsequently attended the cure. The Medical Hospital at Dover has seen several cases cured without mercury which are not included in this list, but not

had a larger proportion of secondary cases than I have. Staff-surgeon Murray, and Mr. Evans of the 57th regiment, and Mr. Brown of the staff corps of cavalry, have been equally successful in France. In the course of twelve months they treated 134 cases, and the proportion of secondary symptoms to the whole number has been under a tenth, and of the same description as my own. In Edinburgh, the result has, in 200 cases, been the same; indeed it has been so generally uniform as far as I am acquainted, that we cannot doubt that the proportion of secondary cases of syphilis is infinitely less than is commonly supposed; but it is in all probability something greater than the preceding remarks would point out, from the cause I have assigned. It appears singular that in the secondary cases, the symptoms should all have been of a mild nature, in two instances only affecting the bones. Some of my friends, of great talents and experience, have been induced from this to suppose, that the greater severity of symptoms, which are frequently met with, have been caused by the exhibition of mercury in the first instance, which aggravated the constitutional disease. I am rather disposed to attribute their mildness to the antiphlogistic means resorted to, on the secondary symptoms first shewing themselves; because the situations I have filled have afforded me many opportunities of seeing persons suffering from the secondary symptoms at the same time, & not taken any medicine to miti-



gate or impede the progress of the disease, and these were apparently running through their several stages until checked by mercury.

If we refer to Dr. Fergusson's Paper on the Venereal Disease, in the Fourth Volume of the Transactions of the Society, we shall find it stated, that in many cases in which the Portuguese certainly gave no mercury for the cure of primary symptoms, the secondary ones run their usual course even to the loss of the bones of the nose; and I am very willing to confirm a remark he once made to me, that there were more people to be met with in the town of Lisbon who had suffered that mutilation, than in any other he has seen of the same size; we cannot then doubt that secondary symptoms of the most serious nature will occasionally follow in particular constitutions.

The Portuguese, in treating all cases of ulcers without mercury, did only what we have been lately doing, and with nearly the same success, suffering considerable delay in the cure of the primary ulcers, and meeting with few cases of secondary symptoms in proportion to the total number treated. It ought, however, to be remarked, that ulcers of a mild character are much more prevalent in Lisbon than in London, because the lower classes of people in Lisbon have an abhorrence of all operations on the venereal organs. But

supposed they did not suffer from secondary symptoms, as they ought to have done according to the ideas we then entertained, because the venereal disease was mitigated by reason of a general and inadequately resisted diffusion of it among them, in consequence of their simple mode of treating it. There is not, however, any more solid foundation for this opinion, which has I am aware made a strong impression on many persons in England, than there is for that which is commonly entertained that the disease is more virulent in Portugal than in Great Britain. On this point I can also only agree with Dr. Fergusson to a certain extent. I do not think the disease which the troops contracted in Portugal, was in the slightest degree more violent than the same kind of complaint at home, neither do I place the least reliance on what has been said by others about a distemper called the Black Lion of Portugal, which I do not believe exists; but I perfectly coincide with him in opinion that the change from the climate of Great Britain to that of Portugal in the summer, with the different mode of life, does act most powerfully on our northern constitutions, and disposes strongly to inflammatory affections. It is this that rendered the same kind of wounds more dangerous to the British soldiers than to the natives, and it was to this disposition, increased by the greatest irregularity of conduct, and often by  
 • vice the natives are not addicted  
 • indebted for the mutilations

which ensued from the venereal disease. If the persons affected had been managed in the manner he has informed us he treated his friend after the battle of Vimiera, the result would have been, and was in many instances very different; but in many cases of this kind, from the strong tendency to gangrene, which is great in constitutions of this description in warm climates, mercury, bark and wine were unfortunately resorted to, instead of bleeding and the most vigorous antiphlogistic treatment, and the part affected was destroyed; but I have seen the same thing happen in several hospitals both civil and military even in England. I write on this subject with confidence, because I was with the army during the whole war in the Peninsula, and had for several months together the superintendence of the hospitals in Lisbon, at a later period than Dr. Fergusson alludes to, and when this disease was one object of my particular attention.

I do not then think Mr. Carmichael's opinion, as to the secondary symptoms peculiar to the phagedænic and sloughing ulcer, receives any support from what occurred to the troops in Portugal; because it did not appear that either of them following sexual intercourse were dependent on the cause which produced the ulcer. Where many men have had intercourse with the same woman, they have not all had the same complaint, although one of the ulcers was during the same phage-

dænic or sloughed; neither has the same woman herself suffered from this distemper; indeed the nature of an ulcer of either kind must, after a short time, effectually prevent any intercourse, and we often find, that their peculiar characters only appeared after the ulcer has existed for several days. I firmly believe also, that in the greater number of cases of sloughing ulcer, where mercury is not given, no secondary symptoms would appear: and in those cases in which they did appear, I apprehend they would be equally dependent on the state of the constitution, both as to the mode of cure and their destructive characters. In other words my observations lead me to conclude, that these ulcers do not depend upon a specific poison, but on the state of the constitution under particular excitement, and that when secondary symptoms do occur, they are not dependent on the state of the ulcer; although I am ready to admit, that in a constitution where an ulcer will rapidly become phagedænic, the secondary symptoms, when they do occur, may be different to a certain extent from those that follow more simple ulcers, in a healthier habit of body.

An officer, in the years 1800 and 1801, suffered severely from almost all the secondary symptoms of syphilis, such as sore throat, eruptions, and nodes, and recovered under the care of the late Mr. Rush. In the year 1808, he landed with his regiment in Portugal. In April 1809, he con-

tracted, for the third time, an ulcer on the penis, but being obliged to move with his corps he found, at the end of the fourth day's march, that it was inflamed, red, painful, and swelled to thrice its natural size, altogether threatening the loss of the part : but from which misfortune he was saved by perfect quietude, and the most vigorous antiphlogistic measures. Whilst the army were in the lines in front of Lisbon, he again contracted an ulcer, which he concealed, until the increase of the disease obliged him to apply for advice, when he was ordered down to Lisbon. The penis was now in the same state as in April 1809, but instead of resorting to the same means of cure, he rode 40 miles into Lisbon without any delay ; the consequence was, the penis sloughed. He underwent several courses of mercury, but the ulceration of the penis could not be induced to heal, his health decayed, his throat became sore, and a swelling took place on the back of the hand and on the foot. He was sent to England, but in vain. He lost by ulceration the remainder of the penis, with part of the hand and foot, and at last died from ulceration of the throat, worn out by disease. His military friends said that he died of the Black

Lion of Portugal ; but it was clearly from the improper treatment in the first instance of a simple disease, that these dreadful consequences were induced ; and I have no doubt they would have been brought on at an earlier period, if he had been treated in the same manner.

Having made these remarks upon the cure of diseases contracted by promiscuous intercourse, without mercury, and shewn that they depend upon the state of the constitution for any peculiar malignancy, I may be permitted to revert to a former period when the same class of people were cured of the same diseases by mercury: that is, between the years 1801 and 1809, when surgeon of the 29th regiment, and I rely much on the knowledge acquired in this period, because the regimental surgeon possesses advantages as to ascertaining facts which are not to be met with in any other walk in life. The persons affected are completely under his controul, he can do what he pleases with them without restraint, and he has them under his observation for a number of years, certain that they cannot have a change of opinion, and act contrary to his wishes. In the period to which I have alluded, a great number of persons afflicted with this disease came under my care, they nearly all underwent a moderate course of mercury, provided the ulcers did not assume a healing appearance at the end of a fortnight or three weeks, and I very seldom had a case of secondary syphilis, not even in those who were occasionally from under my inspection. I am not aware of having ever discharged or lost a man in consequence of it, and the worst case I recollect is now a coal-black man in London, having been discharged the 1st of a fracture of the arm, and in at the battle of Roliça.

Later observation has proved, that a great number of these patients would not have had secondary symptoms, if mercury had not been exhibited; it cannot then be supposed that the mercury prevented their occurrence; but if it be not satisfactory on this point, it goes a great way to prove what is almost as interesting, viz. that mercury properly exhibited is not the cause of all the evil which in many cases is attributed to it; for if it were, these people must have given proofs of it, as every case which did not yield to simple means in the course of a fortnight or three weeks, was put upon the use of mercury. If indeed a moderate course of mercury, nay a few pills, could produce all the symptoms which are frequently supposed to arise from it, there are few of us who have lived in warm climates, where nearly all have taken it irregularly for one disease or other incidental to them, that would not be living proofs of it, while the contrary is well known to be the fact. Whether an insufficient course of mercury is more productive of secondary symptoms than no mercury at all I cannot say; but it appears to me, that it is only where mercury is persisted in after it has evidently ceased to do good, when it disagrees with the constitution, or when it is exhibited at an improper period, or very irregularly, the patient being exposed to wet and cold, that it produces those symptoms usually supposed to depend upon it. The fact I have stated as to the non-occurrence of secondary symptoms in a warm climate, where

all doubtful cases were treated by mercury, is so positive, that I am certain no regimental surgeon of ability will be found to contradict it; that they did sometimes occur is true, but it was only when the troops were moving and under irregular management that they were numerous, and then only in the general hospitals, where all the stragglers and all the bad or protracted cases are collected. In the half-year ending the 24th of June, near 1400 cases of primary symptoms were treated in the army in France by mercury, and in this period only 14 cases of secondary symptoms occurred. It may be said, many cases had not time to shew themselves, but then it must be recollected that all those of the preceding half-year, which required the same length of time, are included in this number, and render the calculation as correct as any computation of the kind can be. In six regiments in one district in England, 521 cases were treated in 15 months by mercury, and ten cases of secondary symptoms appeared, so that the true average proportion will be between the two, or 1 in 75. I by no means, however, wish to be understood as supposing mercury to have a good effect on all primary sores, possessing or not possessing specific characters. I am perfectly aware of its inutility in many cases, and the two following, which have lately occurred to me, would attest the fact, if the records of surgery were not already sufficient.

received, after a suspicious con-



nexion, a sore at the orifice of the urethra and two others near the frænum. For these he rubbed in mercurial ointment for five weeks, when his health deteriorating, he applied to me. I told him the two sores near the frænum would heal in a few days; but that the sore at the orifice of the urethra being dependent on situation would not heal for four or five weeks more. As his mouth was affected, I advised him to omit the mercury, and await the result. He followed my advice, and under mild applications the sores healed.

A soldier contracted an ulcer on the prepuce, and came under my care in October, 1816. At the end of five weeks, the ulcer continuing, I put him, at his earnest entreaty, on the use of mercury; his mouth soon became sore, but no amendment took place for several days in the ulcer. Three weeks after the mercury was left off, other sores of the same nature appeared; but all soon healed, with the exception of one which remained stationary. The man was now satisfied mercury would not cure him, and he waited patiently the event of his treatment, until the 18th of January, when he was discharged perfectly well.

In regard to secondary symptoms, it appears that they occur after primary ulcers which have not been cured by mercury; and that they do also occur after a well regulated course of mercury, there is no man of experience will I believe deny.

Indeed Mr. Hunter, whose accuracy in matters of fact will not be disputed, has left us through his commentator, Dr. Adams, a most interesting case of this nature, where the disease not only affected the first, but also the second order of parts, although mercury was each time properly exhibited for its cure. This case is given as explanatory of Mr. Hunter's doctrine, that if the disposition for the disease be formed, mercury cannot cure it, until it come into action; which, in plain language, means nothing more, than that the disease cannot be prevented in certain constitutions from running its own course, when it may at last be cured.

Now this part of the doctrine that the disposition cannot be cured until formed, and in action, is denied by many of Mr. Hunter's most enthusiastic admirers; but there is this difficulty on the subject, that we are perfectly uncertain, when a disposition has been formed, if such a thing do ever occur; and it is not a fair inference to conclude we have destroyed it, because it never shews itself in action; it is on the contrary more rational to suppose, that there never was a disposition formed at all. This conjecture may also be more reasonably entertained, now that we are aware the greater part of these primary ulcers, which were usually supposed to be the original cause of this disposition and action, are not followed by any such effects, except under particular circumstances, with  
 as totally unacquainted as we are

with the reasons why one man on pricking his finger in dissecting shall have a chain of abscesses to the axilla, indicating every appearance of being infected by morbid matter, whilst half a dozen others shall in no way suffer, although exposed to the same injury, precisely at the same time, and in the same way; or, why a person, although continually exposed, and under circumstances where such an effect might be reasonably expected, should, perhaps, suffer but once or twice in his life; or why, at another time, he shall suffer in the same manner from the prick of a clean needle through a leather glove, which cannot be supposed to convey any infectious matter.

If we refer to the works of Mr. Hunter, Mr. Abernethy, Mr. Carmichael, and to the recorded opinions of Mr. Pearson and others, we shall find instances of diseases arising from accidental and constitutional causes but without any kind of primary ulcers; indeed instances are not wanting of their having arisen without any sexual intercourse having ever taken place; yet these diseases so much resembled the secondary symptoms of syphilis, that it was only by the history they were supposed not to be syphilitic.

If we inquire how opinions are now formed concerning the secondary symptoms which resemble syphilis; whether from appearances or history, and what is the object of the inquiry, I believe

we shall not find a surgeon in London who values his own opinion, will venture to give one on appearances alone: all refer to history, and the object of that to both patient, and surgeon is generally to ascertain whether the use of mercury is to be recommended or not. If the history be truly syphilitic according to our notions of cause and effect, mercury is ordered on the supposition of its being the only specific, although it has too frequently disappointed us. If we find, with the very same appearances or nearly so, that the patient has gone through several severe courses of mercury, it is very properly supposed not to be equal to the cure, or that the disease is mercurial, and sarsaparilla, warm bathing, &c. are substituted. If it arise from constitutional causes, and no syphilitic taint can be traced, even at the distance of half a dozen years, a mixed kind of course is generally resorted to.

It may be said that Mr. Hunter's supposed unerring sign of the disease in all its symptoms being progressive, never retrogressive, except mercury be used, is diagnostic of syphilis; but I do not believe this to be a fact; indeed I have already said, all these symptoms are curable without mercury; Dr. Fergusson has given proofs of it in a country where none is used, and where venereal diseases are supposed to be most prevalent; and as the same thing has been recently done in

Great Britain and France, I may be excused arguing the point, because it is simply a question of fact. I deny it; but I by no means deny, on the contrary, I affirm, that in all obstinate cases of this description, after the disease is fully formed, that is, after the inflammatory stage has passed by, mercury, so long as it produces a beneficial effect, is the remedy I would use in preference to all others; but the moment this good effect was no longer progressive, that instant I would abandon it until the remedy ceased to exert an improper influence on the constitution, when I might, under certain circumstances and when a change was necessary, resume it.

If we refer to cases of the secondary symptoms of syphilis, pseudo-syphilis, or the cachexia syphiloidea, we find that in all a degree of constitutional derangement exists, producing symptoms so much resembling each other as to render the adoption of a mode of cure dependent on the history of what has been already done; may we not then be induced to suppose that neither of these states of disease depend on a specific poison circulating in the blood, and acting on particular parts into the system, but are the result of irritation dependent on the constitution than on the disease. It is allowed by some writers that the secondary symptoms of syphilis, as they are called, are not

ones; a proof that the nature of the disease is changed, and that the primary and secondary disease are two distinct things.

As the irritation of a prick in the finger, only produces abscesses and general derangement when the state of the constitution is not good; as derangement of the digestive organs alone may produce in particular cases constitutional symptoms of disease resembling syphilis; as the irritation of a transplanted tooth may do so in the same manner, so am I disposed to believe that an ulcer or syphilitic chancre produces secondary symptoms only in particular states of the constitution: but what that state may be, or in what it may differ from a state of health, would be as difficult to describe as in any of the other instances to which I have alluded.

Mr. Hunter has said, "the venereal matter, when taken into the constitution, produces an irritation which is capable of being continued independent of a continuance of absorption, and the constitution has no power of relief, therefore a lues venerea continues to increase." In adopting then the opinion of secondary symptoms occurring from a peculiar irritation in the constitution, I am not entertaining a new theory, I am only objecting to that part of the old one, which supposes the constitution to recover itself under any cir-

cumstances without the aid of mercury ; and I do so because I have had proof of it in many instances. But I would by no means imply that it either can or does in every instance : on the contrary, I object only to the opinion of a specific virus, absolutely requiring a specific medicine, and not to the remedy itself. Let us look upon it in the venereal disease as we regard it in other diseases, to be used only in certain cases, when it agrees with the constitution, and then with moderation and prudence, and we shall hear but seldom of the bad effects which are now so common after its exhibition.

That I may not be misunderstood in the object of this paper, I shall take the liberty of recapitulating those points on which I wish the attention to rest, as the present result of the experiment.

1. Every kind of ulcer of the genitals, of whatever form or appearance, is curable without mercury. This I consider to be established as a fact, from the observation of more than 500 cases which I am acquainted with, exclusive of those treated in the different regiments of guards, and which occurred in consequence of promiscuous intercourse.

2. Secondary symptoms, (and I exclude trifling pains, eruptions, or sore throats,) that have disappeared in a few days, but seldom followed

the cure of these ulcers without mercury, and they have upon the whole more frequently followed the raised ulcer of the prepuce than the true characteristic chancre of syphilis affecting the glans penis.

3. The secondary symptoms in the cases alluded to, amounting to one-tenth of the whole, and which were treated on the antiphlogistic plan, have hitherto been nearly confined to the first order of parts; that is, the bones have in two cases only been attacked, and they have equally been cured without mercury.

4. As great a length of time has elapsed in many of these cases without the occurrence of secondary symptoms, as is considered satisfactory where mercury has been used, viz. from six to eighteen months.

5. The primary sores were of every description, from the superficial ulcer of the prepuce and glans to the raised ulcer of the prepuce, the excavated ulcer of the glans, and the irritable and sloughing ulcer of these parts. In the inflammatory stage attended by itching, scabbing, and ulceration, they were treated for the most part by antiphlogistic and mild remedies; in the latter stage, when the ulcers were indolent, whether raised or excavated,



6. The duration of these stages is very different, is often increased by caustic and irritating applications, and is much influenced by surgical discrimination in the local treatment.

7. The last, or indolent stage, often continues for a great length of time, especially in the excavated chancre and raised ulcer of the prepuce; and it appears to me that in these particular cases a gentle course of mercury, so as slightly to affect the gums, will materially shorten the duration of it, although in others it is occasionally of no service.

8. Although the secondary symptoms do for the most part yield to simple remedies, such as venæsection, sudorifics, the warm bath, sarsaparilla, &c. without much loss of time, that is, in the course of from one to four and six months; yet, as in the primary ulcers, a gentle course of mercury will frequently expedite, and in particular persons and states of constitutions is necessary to effect a cure; and that a repetition of it will even, in some cases, be requisite to render it permanent.

Much satisfactory information is yet to be acquired, many experiments to be instituted, and much patient investigation to be gone through, in the comparative treatment of these diseases with and without mercury, before we can arrive at any

fair conclusion on a subject of such great importance. It appears for the reasons I have already assigned, that it is to the surgeons of regiments we are principally to look for them; and from the attention which is bestowed by Sir James M'Grigor, the Director general of the medical department of the army, to this subject, there is every reason to think that much will be done in the course of the next few years. In the mean time it is not my intention to recommend that the practice should be indiscriminately adopted in private life; but advantage may be taken of the facts I have stated on many occasions, to the essential benefit of the patients. In persons of a strumous habit, in those with whom mercury is known to disagree, in others who are supposed to labour under its effects, or of it and the disease combined, and who imprudently contract ulcers resembling chancre, and to whom a course of mercury might, according to received opinions, be highly detrimental, it must be very satisfactory to know that these ulcers will heal by simple means; and that if they be regular in their mode of life, secondary symptoms may not follow, or if they should, that there is still a probability of their being cured without the use of that remedy, which to these people may prove a greater scourge than the disease for which it is administered.

have adduced must necessarily lead

an opinion on, or entered at all into many important points inseparable from a due consideration of the subject; my object has only been to state a few facts, and make some observations on them. If they had been more comprehensive, I should have had to apologize for a volume instead of a paper.



## APPENDIX I.

*Additional Observations on the Case of MRS. KERSHAW.  
By WM. GOODLAD, Esq. &c. (See Vol. VII. p. 112.)*

THIS Society did me the honour to insert in the last Volume of its Transactions, the history of a case where the carotid artery was tied to render the removal of a tumour from the face and neck, practicable. The result of the case at the period of the communication alluded to, was perfectly satisfactory, the wound being cicatrised and the tumour shewing no inclination to return. The event, however, has not been consonant to my hopes, for in the following April, the patient imprudently exposed herself several hours to severe cold, with rain and sleet; the consequence of which was a severe attack of inflammation over the cicatrix, combined with acute rheumatism in the wrists, ancles and knees, and symptoms of inflammation in the chest.

By degrees the inflammation subsided, but effusion had taken place, a tumour formed below the ear, and others followed its course, at first small, indolent and free from pain; but as their size increased, the progress became more rapid, and the distended arteries were situated over the whole of the second rib, from the sternum to the clavicle.

As the disease extended, the mouth became  
and the ear greatly elevated, so that several times  
protruded the membrane of the middle ear, but  
appeared arrested only by pressure from the  
were constantly closed from the distension of the

vity behind the jaw. The character of the disease exactly resembled the tumour which I removed; first arising in small tubercles, which continued apparently in distinct cells, and, as they advanced, an abscess forming upon the apex of each cell. But no ulceration took place except in the cicatrix of the wound, occasioned apparently by pressure which I applied in the early stage, in the vain hope of arresting the progress of the disease.

I need not add that the health of my patient sunk under this severe malady; the swelling in the joints, cough, &c. never left her, and her life was prolonged only fifteen months by the operation: indeed if the disease had not returned, it is probable that the woman would not have resisted the ravages of the pneumonic attack; her lungs appearing, in consequence of it, extensively injured.

Judging from the result of this case, the propriety of tying the carotid artery, or, what I should prefer, commanding the current of blood through it, to remove deep seated tumours in the neck, might be doubted: yet as no part of the body is more vascular, and as many patients have been allowed to die, from an apprehension of hæmorrhage, rather than incur the danger of the extirpation of tumours thus situated; it will not I trust be questioned, but that the operation I proposed is still worthy the attention of surgeons, and is in no wise affected by the result which is now submitted to the public. The nature of the tumour, the constitutional and local actions which excite it, the powers of extension which accompany it, and its condensing parts, are here, as elsewhere, in the surgeon's care; but when none of these are attempted, there can scarcely, the propriety of cutting in

the first place upon the artery, since the surgeon has thereby a tourniquet in his own fingers, sufficient to command the hæmorrhage, and is therefore enabled to remove tumours with which he dare not otherwise interfere; and especially since he is also confident that the danger of the operation cannot be at all increased by this precaution.

## APPENDIX II.

*Postscript to DR. FERGUSSON'S Paper on the Origin and Nature of the Yellow Fever. (See page 108.)*

ON my arrival in England a short time ago, I inquired for the paper I had sent home from Barbadoes, on the Nature and Origin of the Yellow Fever, with the view of revising it; and as that disease had subsequently prevailed to a great degree throughout the West India Colonies, of adding to it some important matter in confirmation of the facts and opinions detailed in the original communication; but I was given to understand that the paper had already been printed, and it was of course too late to alter it.

I was the more concerned at this information, as I was aware of its many imperfections, and from its having been written where I was, in a state of extreme bad health, I had given no more than a provisional consent (viz. that of my decease in the West Indies) for its publication, in which case I felt it to be a duty I owed to society, from the situation I had held, to record a posthumous protest against opinions and doctrines, which I conceived to be as prejudicial to its best interests, as I knew they were at variance with the nearly unanimous evidence of all experienced medical officers of the army and navy in the West Indies for the last 25 years.

As the matter I have collected cannot now be wrought into the body of the original paper, I shall do no more at present than offer to the Society a short supplement to it, from the pen of an ingenious young friend of mine, Mr. Ralph, assistant surgeon of the Queen's Regiment, who has distinguished himself under my own eye, as much by humane and active discharge of his duty, as by his zeal in the cause of science and of truth, during the whole

course of the late epidemic visitation of yellow fever in the West Indies. Through the early death of the surgeon, the care of the regiment devolved upon him, and he has written an excellent health history of the corps during the first nine months of their service in the West Indies, which I am sure, but for its great length, would not be deemed unfit for publication in the memoirs of the Society. The Appendix at the end will however convey a summary of his essay, and as it particularly bears upon the facts stated in my paper of last March, I beg to submit it, which I do with the most perfect confidence, as I can vouch for the accuracy in every respect of the whole of its contents.

He gives the hospital history of one newly arrived regiment, and of the servants that attended the sick; to which I have to add that on the whole establishments of Barbadoes, there did not occur a single instance of a native coloured servant of any description being affected with the yellow or other ardent fevers; although it has been proved beyond a doubt that these people are fully as amenable to the action of all the acknowledged contagions and of plague, typhus fever, small pox, measles and scarlatina, as the whites: and if it were necessary to advance any thing farther in refutation of the new doctrine of non-liability to second attacks, I might here adduce the case of a negroman presented to me by a most experienced officer, staff surgeon Dunkin of Demerara, who under Mr. Dunkin's own care suffered two well marked severe attacks of the malignant remittent or yellow fever, the last approaching very near to black vomit, and both of the attacks occurring soon after his return to the West Indies, after a residence in England. At the time I examined this negro he was suffering severely from gout.

WM. FERGUSSON,  
Inspector of Hospitals.

*London, September 1, 1817.*



## APPENDIX.

No. I.

*Of the Hospital Servants.*

Queen's Regiment.	Number employed	Number attacked with fever	Of which number died	Remarks.
Men employed in immediate attendance on the fever patients, and who slept in the upper apartments of the hospitals, in which the fever cases were treated.	17	4	0	One fourth of the individuals employed attacked with fever.
Individuals employed as hospital servants, who slept on the basement floor of the hospital buildings, and who held no communication with the sick.	17	8	8	A half of the number employed were seized, and fell victims to the fever.
Attendants on the persons of the sick, in the late naval hospital, situated on an elevated dry rock, many feet higher than the level of the parade ground.	15	2	2	One-seventh of those individuals attacked with fever.
Total	49	14	10	Two-sevenths of the whole of the hospital servants seized.
<p>I made it an object of particular inquiry to ascertain the comparative healthfulness of the upper and lower apartments of the barracks.</p> <p>The result of this inquiry was, that the individuals residing in the lower apartments, were attacked in the proportion of two to one of those living in the upper.</p>				

## No. II.

*Comparative Statement of the Number of Soldiers residing in the Barracks, and the Number of Hospital Servants affected with Fever.*

Queen's Regiment.				Ratio.
	No.		No.	
Residing in Barracks.	724	Attacked with fever.	390	Rather more than a half attacked.
Hospital Servants.	49	Attacked with fever.	14	Two out of seven seized.

## No. III.

*Statement, proving the Non-liability of coloured Creoles to attacks of Yellow Fever.*

Coloured women, blacks, and mulattoes, natives of Barbadoes, employed about the persons of the sick, as nurses, &c. &c.		Creole blacks and mulattoes occupied in washing the apparel, bedding, &c. of the patients affected with fever.
Number.	Period employed.	Number.
23	From 25th Aug. to 24th Sept.	17
29	25th Sept. to 24th Dec.	16
17	25th Dec. to 24th Jan.	10
15	25th Jan. to 24th Feb.	11

During the whole of the period mentioned in the above table, which is that in which yellow fever prevailed epidemically, only a single instance occurred, of a coloured hospital servant being affected with a febrile disease. The individual affected, was a nurse of the fever wards of the hospital. She was attacked with well-marked scarlatina anginosa. This disease was by her communicated to one of the surgical patients, but did not spread further. They both recovered.

## No. IV.

*Table exhibiting the effects of the Fever on thirteen Soldiers who were employed in white-washing the whole of the Hospitals.*

Period employed.	Number.	Of which number, had the fever previous to being thus employed.	Attacked while employed, or afterwards.	Died.
During the three last weeks of December, and the whole of January.	13	1	1	1

## No. V.

*Table shewing the effects of Fever on the Officers, &c.*

Number who were seized.	Of which number died.	Number who escaped the fever.	Total.
25	10	8	33

*Table shewing the number of Sick Officers' Servants who were affected with Fever.*

Number of white servants who attended on their masters when labouring under fever.	Affected whilst attending, or after having attended.	Of which number died.	Escaped.
22	5	4	17

## No. VI.

*Statement specifying the number of individuals who, having passed the Fever in Gibraltar in 1804, were attacked with the same disease in Barbadoes in 1816, &c.*

Officers, Non-Commissioned Officers, Privates, Women, and Children, who had the fever when in Gibraltar in 1804.	Affected with Yellow Fever in 1816, Barbadoes.	Died.	In Gibraltar 1804, when Epidemic Fever raged and escaped.	Of these individuals attacked in Barbadoes.
32	3	0	*5	0

It is remarkable that the only officer who was in Gibraltar in 1804, Captain Johnstone, and who there was affected with the fever which raged with so much fatality, experienced a severe attack of yellow fever in Barbadoes, when it affected the other officers of the corps.

Captain Johnstone was visited by Dr. Fergusson and the late Dr. Wray, who were both decided in their opinion that Captain J. was affected with well marked yellow fever. Since his recovery, I have heard him repeatedly state, that the sensations and symptoms were precisely similar to those which he experienced when labouring under fever in Gibraltar.

\* One individual of the five was with the regiment in the Isle of Martinique in 1795, and was there affected with Yellow Fever.

## No. VII.

*Facts proving the Human System to be susceptible of a second attack of Yellow Fever.*

No. 1.—Serjeant and Mrs Moncrieffe, Queen's Royal Regiment, were admitted into the hospital early in Sep-

tember, both labouring under severe and well marked attacks of yellow fever. The serjeant died on the seventh day of the disease, with black vomit and hæmorrhages from the gums. His wife had much irritability of stomach, and many untoward symptoms; she recovered contrary to the opinion of her medical attendant. Mrs. Moncrieffe was seized a second time with most alarming symptoms of fever on the 2d of October; her countenance, eyes, tongue, and peculiar gastric symptoms, pointedly manifested the disease to be yellow fever. The vomiting on the first day was bilious; on the second of the disease glairy; on the fourth flaky, copious, and dark coloured. She was bled on the first, second, and twice on the third day, losing in the whole fifty ounces of blood; she was reduced to an extreme degree of debility, from which she gradually recovered, and is at present enjoying a high state of health. Previously to her admission into the hospital, this woman had been living in the huts, in which the fever raged with particular malignancy.

No. 2.—Corporal John Smith was admitted into the hospital the 11th of September with severe disease. He was pointed out to my particular notice by the late Dr. Wray, as shewing symptoms strikingly characteristic of yellow fever; he recovered. He had every symptom which precedes black vomit; I watched this patient with much anxiety, expecting that the matters vomited would speedily become flaky, they being then copious and watery. I was happily deceived. Corporal Smith was again attacked with fever on the 9th of October, and died on the 12th of October with black vomit and hiccough.

No. 3.—John Grombleherne was attacked on the 11th of October with most alarming symptoms of yellow fever; he recovered; his wife was seized on the 26th of October,

and died. They had resided in the huts. On the 5th of December he was attacked a second time with yellow fever; he died on the 9th of December with hæmorrhage, black vomit, and hiccough.

Nos. 4, 5, 6, 7, and 8, are merely repetitions of the same facts.

I have purposely avoided taking any notice of those individuals who were affected with mild, bilious, remittent, or continued inflammatory fever, in the summer months, and who were seized with the epidemic yellow fever during the sickly season.

*Table of second attacks of Yellow Fever.*

Name.	Period of First Attack.	Period of Second Attack.	Event.
Mrs. Moncrieffe .....	4th September.	2d October.	Recovered.
Corporal Smith .....	11th September.	9th October.	Died.
John Grombleherne .....	11th October.	5th December.	Died.
William Potter .....	27th September.	11th November.	Died.
Richard Waldie .....	5th October.	3d November.	Died.
Joseph Crabtree .....	6th October.	29th October.	Died.
Thomas Sconce .....	31st October.	20th November.	Died.
Lieut. and Adjutant Spencer.	Very early in Nov. the day not ascertained.	6th December.	Died.

## GENERAL STATEMENT—1816.

PERIODS.	Number of Cases of continued and remittent.	Intermittent.	Deaths.	PERIODS.	Number of Cases of continued and remittent.	Intermittent.	Deaths.
From 4th June to 8th.	8	12		From 1st Sept. to 7th.	22	0	0
9th — to 15th.	7	5		8th — to 14th.	26	0	7
16th — to 22nd.	8	5		15th — to 21st.	16	0	2
23rd — to 29th.	4	1		22nd — to 28th.	15	2	4
30th — to 6th July.	6	1		29th — to 5th Oct.	20	0	3
7th July to 13th.	10	1		6th Oct. to 12th.	21	0	3
14th — to 20th.	13	2		13th — to 19th.	9	0	1
21st — to 27th.	7	2		20th — to 26th.	20	0	2
28th — to 3rd Aug.	14	0		27th — to 2nd Nov.	24	0	6
4th Aug. to 10th.	8	3		3rd Nov. to 9th.	30	0	7
11th — to 17th.	7	0		10th — to 16th.	32	0	8
18th — to 24th.	9	0		17th — to 23rd.	25	0	7
25th — to 31st.	11	0		24th — to 30th.	24	0	5
Total—Three Months.	112	432		From 1st Dec. to 7th Dec.	24	0	9
				8th — to 14th.	22	0	9
				15th — to 21st.	9	0	4
				22nd — to 28th.	0	0	0
				29th — to 4th Jan.	14	0	5
				5th Jan. to 11th.	14	0	2
				12th — to 18th.	6	0	3
				19th — to 25th.	6	0	1
				26th — to 1st Feb.	3	0	1
				2nd Feb. to 8th.	5	0	2
				9th — to 15th.	3	0	0
				Total—Five Months and Fifteen Days †.	390	2	91

\* Inflammatory, continued, and mild remittent Fevers prevailed during these months.

† It is presumed that the morbid miasms, which gave rise to these intermittents, had been imbibed by the individuals affected, at Chatham, where the Regiment had been stationed during several months previous to our embarkation for the West Indies.

‡ The period in which fever raged epidemically. One, out of four attacked, died. (Signed) Alexander J. Ralph, Assistant-Surgeon, Queen's Royal Regiment.

## APPENDIX III.

*Additional Particulars on the Preparation of the Extract of Stramonium, by DR. MARCET, in reference to the Paper published by him, in the last Volume of these Transactions, (p. 551.)*

HAVING, since the publication of my communication on the Extract of Stramonium, taken every opportunity of multiplying my trials of the effects of that remedy, and having received very favorable reports of its efficacy from various practitioners in different parts of the country, I think it incumbent upon me to communicate to the public an important fact which these trials have brought to light, respecting the mode of preparing this medicine.

Having had occasion, at Guy's Hospital, in the course of last summer, to renew our supply of this extract, two patients who were much accustomed to take it, the one for a *tic douloureux*, and the other for a very painful uterine disease, both complained that the remedy was much less effectual than it had been on former occasions, in producing the usual relief; and that, in order to obtain the desired effect, it was necessary to take as much as two or three times the quantity they had been accustomed to use. Having mentioned this to Mr. Hudson, who had prepared the first specimens, this gentleman told me that he had already received, from other quarters, information to the same effect, and he soon favoured me with the following explanation:



*Letter of Mr. Hudson to Dr. Marcet.*

---

27, HAYMARKET, 27th October, 1817.

SIR,

During the last summer some remarks were made to me on the uncertainty, or want of uniformity, experienced in the effects of the Extract of Stramonium prepared from the seeds; and I was also informed, that there was a considerable variation in the appearance of the extract prepared by different persons. I therefore examined two specimens which had appeared, upon trial, to differ materially in strength. No. 1. was bright, black, and tenacious; No. 2. was dull, brownish, and crumbly. When dissolved, No. 1. was found to consist of extractive matter, with very little deposit; No. 2. produced a very large deposit, of a farinaceous appearance: this matter abounds in the decoction of the seeds, and occasions considerable trouble to separate it. I have sometimes been obliged to stop the evaporation when considerably advanced, and subject the decoction to a second deposition, and have two or three times been obliged to re-dissolve the Extract. This method is tedious, and renders the product small, and expensive; but it is quite clear to me, both from the testimony of practitioners and my own observation, that it is of great importance to use this precaution in the preparation, in order to make the Extract resemble the specimen, No. 1. which was found to be very superior to No. 2.; in some instances as 3 to 1. I have no doubt the Extract will be found uncertain, in proportion to the quantity of farina it contains.

There is, however, another circumstance which has had a share in producing the uncertainty. The seeds of Stramonium had not been an article of any value till the effects

of the Extract became known, through your paper;—the demand then became so great, that all the seed that could be found, new or old, in good or bad condition, was brought into the market, and speedily bought up. This inconvenience, I believe, no longer exists; the growers of medical herbs have this year raised large quantities of the Stramonium plant, and there is a good supply of fresh seeds. I hope, therefore, we may anticipate more uniform and favorable results in the future exhibition of the medicine.

I am, Sir,

Yours, very respectfully,

W. B. HUDSON.

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To the above very distinct and satisfactory statement of Mr. Hudson, the following particulars (which I obtained from a person whose accuracy and competence in pharmaceutical manipulations may be depended upon) may be added, as tending to confirm and farther explain Mr. Hudson's observations.

1. The decoction of the seeds of Stramonium, when newly made, is turbid and milky, and continues so even after long standing.

2. This decoction, if immediately filtered through paper, cannot be obtained quite transparent, though it becomes much less opaque,

3. The filtered decoction, on standing in contact with the air, for three or four days, deposits very little; and, in close vessels, it deposits still less.

4. The last-mentioned decoction, by rapid but cautious inspissation, yields an extract, which is very tenacious; and

which, on being again mixed with water and gently warmed, forms a solution nearly as transparent as the decoction from which it was prepared.

5. The extract, on the contrary, made from the unfiltered decoction, is not tenacious; but it is oily and friable, and if mixed with water, yields a considerable quantity of insoluble sediment.

It appears, therefore, that in order to prepare the strongest extract, two modes of operating present themselves: the one consists in filtering the decoction made from the seeds and obtaining the extract from this filtered solution; and the other, in redissolving the extract obtained without any previous filtration, and again evaporating the solution after the farinaceous matter has spontaneously subsided from it. Both preparations are probably correct; but further experience will be necessary to decide which is the most convenient or economical.

REFERENCE TO THE PLATES.

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*Plates IV. and V.* Illustrate the subject of Mr. Howship's paper, on the formation of New Joints; and are explained at pages 523 and 524.

*Plate VI.* Refers to Mr. Cooper's paper, page 427.

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MR. NORRIS.

The Hunterian Oration, delivered before the Royal College of Surgeons, on Friday, February 14, 1817, and published at their Request. By William Norris, Master of the College, &c. 4to, Lond. 1817.

MR. THOMAS FORSTER.

Observations on the Phenomena of Insanity; being a Supplement to Observations on the casual and periodical Influence of peculiar States of the Atmosphere on Human Health and Disease. By Thomas Forster, F.L.S. &c. 8vo, Lond. 1817.

# INDEX

TO THE

## EIGHTH VOLUME.

---

### A.

	Page
<i>Albert, Dr.</i> relation of a case of retained fœtus .....	507
Algiers, account of the wounded seamen in the action before ....	1
Aneurism, case of popliteal .....	490
Arteries, on the ligature of.....	490

### B.

<i>Baron, Dr. John</i> , case of rupture of the brain and its mem- branes from hydrocephalus.....	51
<i>Blagden, Mr. Richard</i> , case of fatal hæmorrhage from the ex- traction of a tooth.....	224
Bones, on the morbid structure of.....	57
Brain, cases of hernia of.....	12
——, Rupture of, from hydrocephalus.....	51

### C.

Calculi, urinary, in females, extracted without lithotomy.....	427
Calculous Diseases, on the treatment of.....	526
Carotid artery, case of ligature of.....	582
<i>Cooper, Mr. Samuel</i> , case of lithotomy.....	206

	Page
<i>Cooper, Mr. Astley</i> , case of calculi in females removed by dilating the urethra.....	427
<i>Crampton, Dr. John</i> , case of rupture of the stomach.....	228

## E.

Extract of stramonium, on the preparation of.....	594
Extra-uterine foetus, case of.....	502

## F.

<i>Fergusson, Dr. William</i> , on the nature and origin of yellow fever.....	108 & 585
Finger, wound of, producing severe nervous affections.....	246
Foetus, extra-uterine, case of.....	502
——, retained for a number of years.....	507
Fungus Hæmatodes, case of.....	272

## G.

<i>Goodlad, Mr. William</i> , additional observations on the case of Mrs. Kershaw... ..	582
<i>Guthrie, Mr. G. J.</i> on the treatment of the venereal disease without mercury.....	550

## H.

Hæmorrhage, case of fatal, from the extraction of a tooth.....	224
Heart, on the diseases of the.....	434
Hepatitis, on the use of acid baths in.....	185
Hernia Cerebri, cases of.....	12
<i>Holland, Dr. Henry</i> , on the Pellagra of Lombardy.....	317
<i>Howship, Mr. John</i> , on the morbid structure of bones.....	57
—— on the formation of new joints.....	515

	Page
<i>Hudson, Mr. W. B.</i> on the preparation of the extract of stramonium .....	595
Hydrocephalus producing rupture of the brain.....	51

I.

Infectious nature of the yellow fever, denied.....	108 & 585
--	-----------

J.

<i>James, Mr. J. H.</i> case of disease of the heart.....	434
Joints new, on the formation of.....	515

K.

<i>Kershaw, Mrs.</i> sequel of the case of.....	582
---	-----

L.

<i>Lane, Mr. Charles,</i> case of ulcer of the tongue, cured by arsenic .....	201
<i>Langstaff, Mr. George,</i> cases of fungus hæmatodes.....	272
—————, case of extra-uterine foetus.....	502
<i>Lawrence, Mr. William,</i> observations on fungus hæmatodes....	272
—————, on the ligature of arteries.....	490
Leander, report of the state of the wounded on board the.....	1
Ligature of arteries, observations on.....	490
Lithotomy, case of.....	206
Lues Venerea, disquisitions on.....	349 & 550

M.

<i>Marcel, Dr. Alexander,</i> on the preparation of the extract of stramonium.....	594
<i>Murphy, Dr.</i> case of foetus retained several years.....	507
stry; on its use in syphilis.....	349 & 550

## N.

	Page
Nervous affection from a punctured wound.....	246
————— attended with pain in the thumb.....	252
Nitro-muriatic acid, on the internal and external use of.....	173

## O.

Ossification, progress of, in new joints.....	57
---	----

## P.

<i>Pearson, Mr. John</i> , Case of painful affection of the nerves of the thumb.....	252
Pellagra of Lombardy, history of.....	317
Popliteal aneurism, case of.....	490
<i>Prout, Dr. William</i> , on the proximate principles of the urine, &c.....	526

## Q.

<i>Quarrier, Dr. Daniel</i> , report of the state of the wounded seamen in the action before Algiers.....	1
---	---

## R.

<i>Rose, Mr. Thomas</i> , on the treatment of syphilis.....	349
---	-----

## S.

<i>Scott, Dr. Helenus</i> , on the use of nitro-muriatic acid in the cure of diseases.....	173
<i>Stanley, Mr. Edward</i> , cases of typhoid fever.....	12
Stomach, on the structure of.....	228 & 231

	Page
Stramonium, extract of, on its preparation.....	594
Syphilis, on the treatment of.....	349 & 550

## T.

Thumb, painful affection of the nerves of.....	252
Tongue, ulcer of, cured by arsenic.....	221
Tooth, extraction of, fatal by hæmorrhage.....	224
<i>Travers, Mr. Benjamin</i> , observations on cases of rupture of the stomach.....	231
Tumor in face and neck, sequel of a case of.....	582

## U.

Ulcer of tongue, ill-conditioned, cured by arsenic.....	201
Urethra, dilatation of, in females.....	427
Urinary calculi extracted in females.....	427
Urine, proximate principles of.....	526

## V.

Venereal disease.....	349 & 550
-----------------------	-----------

## W.

<i>Wardrop, Mr. James</i> , case of severe nervous affection from a punctured wound.....	246
West Indies, yellow fever and other diseases of.....	108 & 585
Wound of finger, followed by severe nervous affection.....	246

## Y.

Yellow fever. Inquiry into its origin and nature.....	108 & 585
---	-----------

## ERRATA.

- Page 114, line 10, for severely, read severally.*
- 116, — 4, — sifted, — shifted.
- —, — 6, — single, — shingle.
- 118, — 19, — those best, — those the best.
- 119, — 19, *dele* in.
- 127, — 9, — for, — of.
- 128, — 8, — Nor, — Now.
- —, — 2 (*from the bottom*) The constitution, read Though the constitution of the stranger.
- 131, — 7, — past, read post.
- 131, — 14, after miasmata, — below.
- 135, — 15, for incontractibility, — incontractility.
- —, — 2, (*from bottom*) for gangrene, read disorganization.
- 139, — 22, — subtle, — subtle.
- 140, — 2, (*from bottom*) after accumulating, read their forces.
- 143, — 8, — been, — received.
- 145, — 2, for during, — doing.
- 150, — 24, — tho' difficult to, — through defect of.
- 151, — 10, — 4th and 60th, — 4th battallion of the 60th.
- —, — 12, — and, — and the.
- —, — 20, before instead, insert for.
- 152, — 5, (*from bottom*) for were, read and.
- 153, — 3, for being, — living.
- —, — 20, — flourished, — perished.

END OF VOL. VIII.

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## EXPLANATION

*Of Plate VI. referring to Mr. ASTLEY COOPER'S  
Paper on the Cases of Calculi.*

---

*Fig. 1.* Is a view of the Calculus extracted by  
Mr. Okes, see p. 430.

*Fig. 2.* Is the same Calculus in a different view.

*Fig. 3.* Is the Calculus extracted by Mr. Astley  
Cooper, p. 428.

*Fig. 4.* Is the Calculus extracted by Mr. Wright,  
of Nottingham, p. 429.

---

My friend, Dr. YELLOLY, has given a very excellent paper on Urinary Calculus, discharged by the efforts of nature, in Vol. VI. of these Transactions, p. 574, to which I beg to refer the reader.

ASTLEY COOPER.





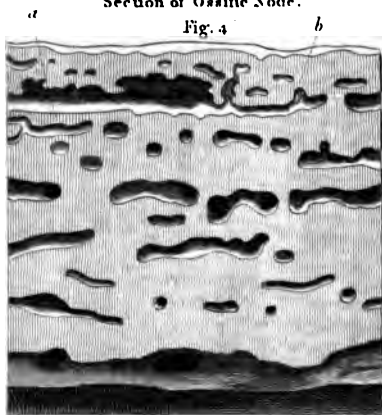
*61.10-10.*

*Engraved by J.T. Wedgwood.*



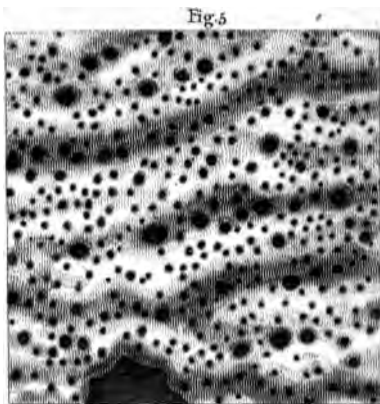
Section of Ossicle Node.

Fig. 4



Surface of Node.

Fig. 5



Elevation of Surface  
of Bone.

Fig. 2

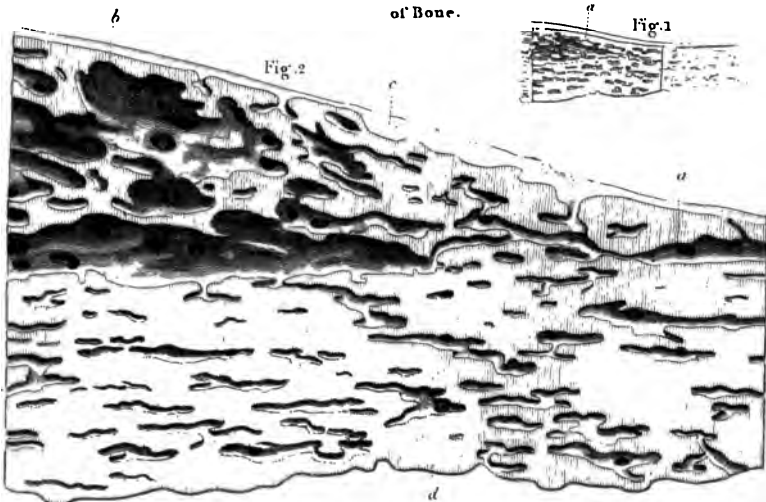
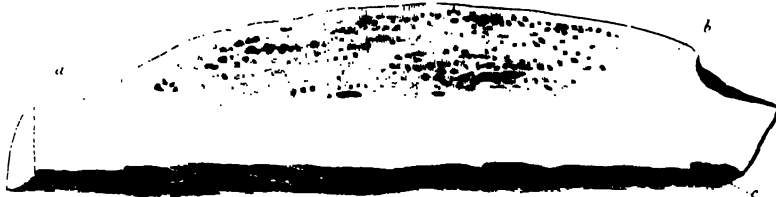


Fig. 1



Elevation of Surface  
of Bone.

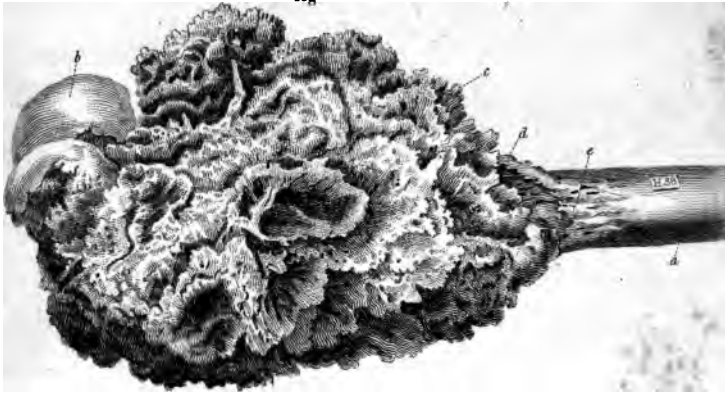
Fig. 3



*T. Wilson sculp.*



Exostosis  
Fig. 1



Exostosis  
Fig. 2



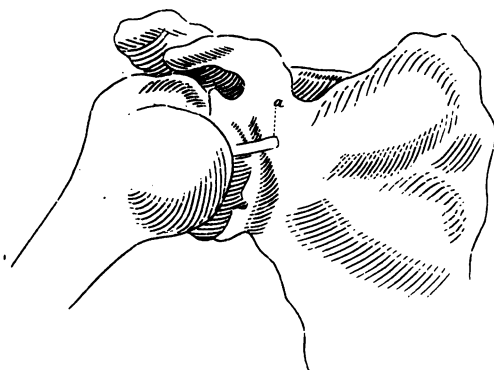
Howship del.

Milton sculp.

1



Fig. 1



Formation of New Joint Shoulder.

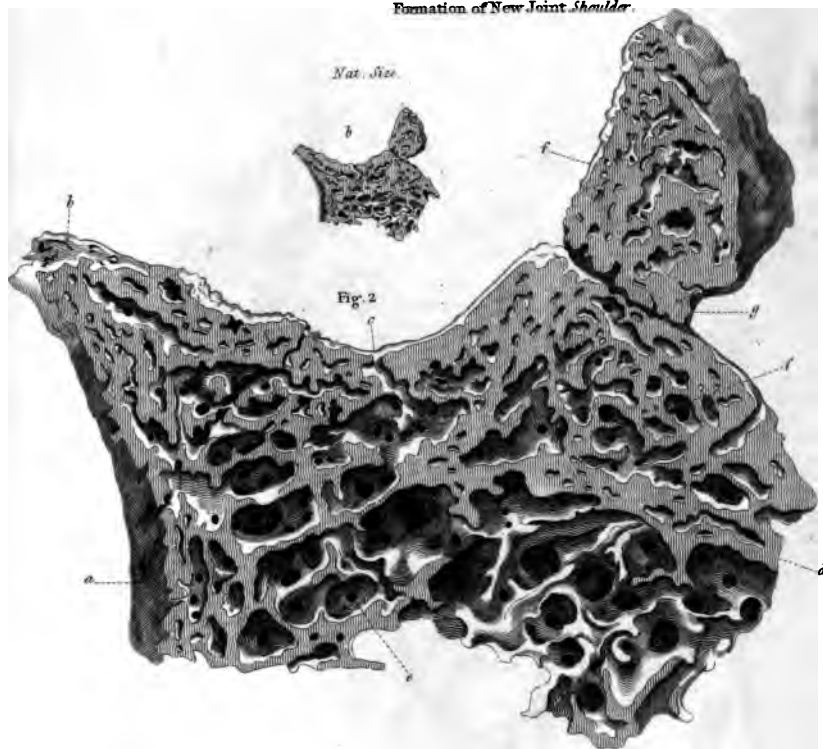
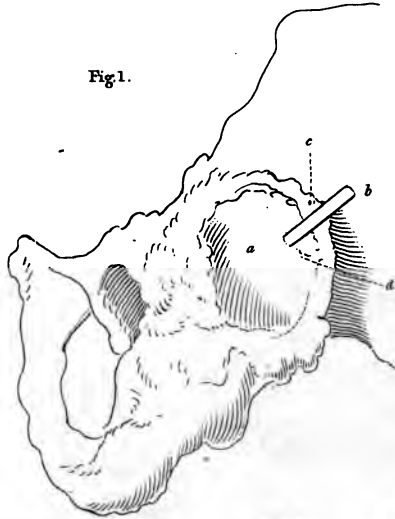


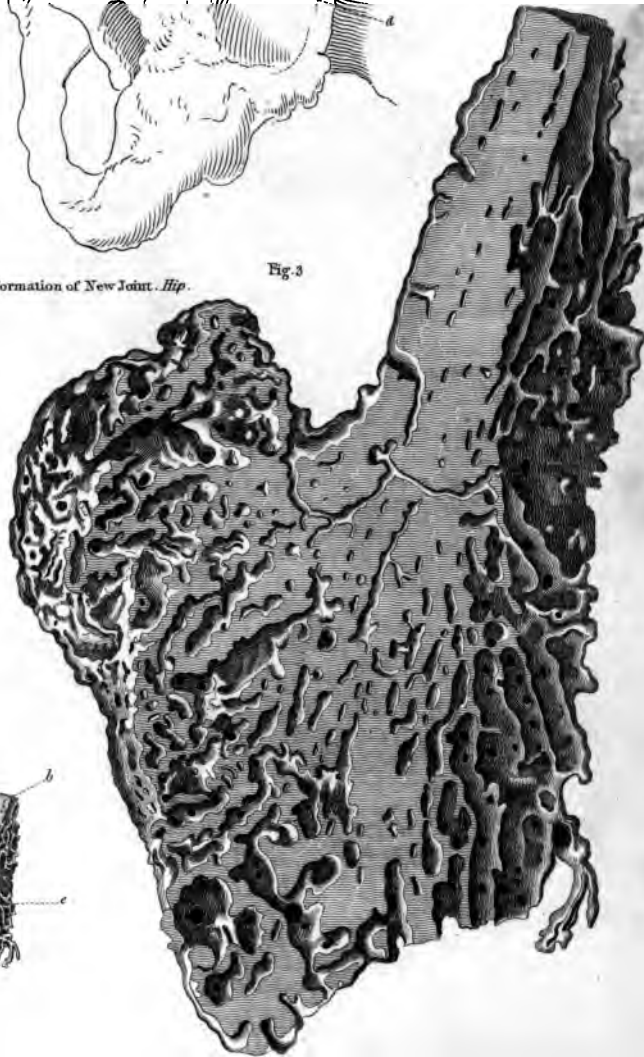


Fig 1.



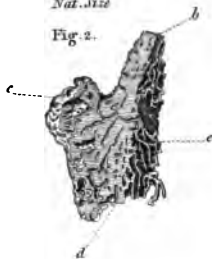
Formation of New Joint. Hip.

Fig 3



Nat. Size

Fig 2.

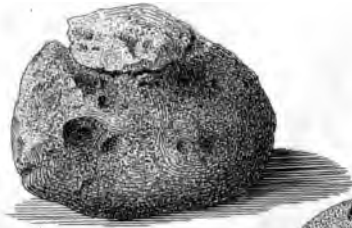


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**Fig. 1.**



**Fig. 4.**



**Fig. 3.**



**Fig. 2.**













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